

# **Sterling Highway MP 45–60**

## **Draft SEIS and Draft Section 4(f) Evaluation**

### **Chapter 3**

#### *Affected Environment and Environmental Consequences*



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## **Table of Contents**

3	Affected Environment and Environmental Consequences .....	3-1
3.1	Land Ownership and Land Use .....	3-2
3.1.1	Affected Environment.....	3-2
3.1.2	Environmental Consequences .....	3-6
3.2	Land Use Plans and Policies .....	3-25
3.2.1	Affected Environment.....	3-25
3.2.2	Environmental Consequences (KNWR Comprehensive Conservation Plan) .....	3-39
3.2.3	Environmental Consequences (Chugach National Forest Plan) .....	3-43
3.2.4	Environmental Consequences (Federal Management—USFS Roadless Areas).....	3-50
3.2.5	Environmental Consequences (Federal Management—ANILCA Title XI) .....	3-56
3.2.6	Environmental Consequences (State Plans).....	3-59
3.2.7	Environmental Consequences (Borough and Other Pertinent Plans) .....	3-63
3.3	Social Environment .....	3-81
3.3.1	Affected Environment.....	3-81
3.3.2	Environmental Consequences .....	3-86
3.4	Housing and Relocation .....	3-93
3.4.1	Affected Environment.....	3-93
3.4.2	Environmental Consequences .....	3-94
3.5	Economic Environment.....	3-99
3.5.1	Affected Environment.....	3-99
3.5.2	Environmental Consequences .....	3-105
3.6	Transportation .....	3-113
3.6.1	Affected Environment.....	3-113
3.6.2	Environmental Consequences .....	3-117
3.7	River Navigation .....	3-151
3.7.1	Affected Environment.....	3-151
3.7.2	Environmental Consequences .....	3-156
3.8	Park and Recreation Resources .....	3-163
3.8.1	Affected Environment.....	3-163

3.8.2	Environmental Consequences .....	3-173
3.9	Historic and Archaeological Preservation .....	3-199
3.9.1	Affected Environment .....	3-199
3.9.2	Environmental Consequences .....	3-203
3.10	Subsistence .....	3-215
3.10.1	Affected Environment .....	3-216
3.10.2	Environmental Consequences .....	3-220
3.11	Utilities .....	3-233
3.11.1	Affected Environment .....	3-233
3.11.2	Environmental Consequences .....	3-233
3.12	Geology and Topography .....	3-239
3.12.1	Affected Environment .....	3-239
3.12.2	Environmental Consequences .....	3-240
3.13	Water Bodies and Water Quality .....	3-247
3.13.1	Affected Environment .....	3-247
3.13.2	Environmental Consequences .....	3-250
3.14	Air Quality .....	3-263
3.14.1	Affected Environment .....	3-263
3.14.2	Environmental Consequences .....	3-264
3.15	Noise .....	3-269
3.15.1	Affected Environment .....	3-269
3.15.2	Environmental Consequences .....	3-273
3.16	Visual .....	3-287
3.16.1	Affected Environment .....	3-287
3.16.2	Environmental Consequences .....	3-291
3.17	Hazardous Waste Sites and Spills .....	3-311
3.17.1	Affected Environment .....	3-311
3.17.2	Environmental Consequences .....	3-314
3.18	Energy .....	3-325
3.18.1	Affected Environment .....	3-325
3.18.2	Environmental Consequences .....	3-325
3.19	Floodplains .....	3-329
3.19.1	Affected Environment .....	3-329

3.19.2	Environmental Consequences .....	3-331
3.20	Wetlands and Vegetation.....	3-339
3.20.1	Affected Environment.....	3-339
3.20.2	Environmental Consequences .....	3-347
3.21	Fish and Essential Fish Habitat .....	3-367
3.21.1	Affected Environment.....	3-367
3.21.2	Environmental Consequences .....	3-378
3.22	Wildlife.....	3-391
3.22.1	Affected Environment.....	3-391
3.22.2	Environmental Consequences (Threatened and Endangered Species) .....	3-409
3.22.3	Environmental Consequences (Brown Bear).....	3-410
3.22.4	Environmental Consequences (Moose) .....	3-423
3.22.5	Environmental Consequences (Other Mammals) .....	3-430
3.22.6	Environmental Consequences (Birds).....	3-435
3.22.7	Environmental Consequences (Wood Frog).....	3-442
3.23	Coastal Zone Management .....	3-453
3.23.1	Affected Environment.....	3-453
3.23.2	Environmental Consequences .....	3-454
3.24	Permits.....	3-459
3.24.1	Laws, Regulations, and Permits Related to the Project .....	3-459
3.24.2	Implications for Permitting .....	3-464
3.25	Short-Term Uses versus Long-Term Productivity .....	3-467
3.25.1	Environmental Consequences .....	3-467
3.26	Irreversible and Irretrievable Commitments of Resources.....	3-469
3.26.1	Environmental Consequences .....	3-469
3.27	Cumulative Impacts.....	3-471
3.27.1	Introduction to Cumulative Impacts .....	3-471
3.27.2	Resources Assessed for Cumulative Impacts .....	3-471
3.27.3	Geographic Scope and Timeframe of Cumulative Impacts Analysis .....	3-473
3.27.4	Past, Present, and Reasonably Foreseeable Future Actions.....	3-474
3.27.5	Characterization of the Resources to be Evaluated.....	3-480
3.27.6	Cause-and-Effect Relationships between Activities and Resources.....	3-488
3.27.7	Magnitude and Significance of Cumulative Effects .....	3-489

## **List of Tables**

Table 3.1-1. Land ownership and land use in the project area .....	3-3
Table 3.1-2. Lands required for build alternatives.....	3-7
Table 3.1-3. Land uses converted to transportation use.....	3-7
Table 3.1-4. Estimated land use construction impacts.....	3-9
Table 3.2-1. Impacts to Inventoried Roadless Areas—Cooper Creek Alternative.....	3-52
Table 3.2-2. Impacts to Inventoried Roadless Areas—G South Alternative.....	3-53
Table 3.2-3. Impacts to Inventoried Roadless Areas—Juneau Creek Alternative and Juneau Creek Variant Alternative .....	3-55
Table 3.3-1. Population in Alaska, the Kenai Peninsula Borough, and Cooper Landing.....	3-81
Table 3.3-2. U.S. Department of Health and Human Services 2013 poverty guidelines .....	3-82
Table 3.3-3. Poverty rates in Alaska, Kenai Peninsula Borough, and Cooper Landing .....	3-83
Table 3.3-4. Population breakdown by age for Alaska, Kenai Peninsula Borough, and Cooper Landing .....	3-83
Table 3.3-5. Community facilities and services available in Cooper Landing vicinity.....	3-85
Table 3.4-1. Cooper Landing housing characteristics .....	3-93
Table 3.4-2. Ownership and right-of-way acquisition by alternative .....	3-94
Table 3.4-3. Cooper Landing residences for sale in \$200,000 to \$350,000 price range .....	3-96
Table 3.5-1. Kenai Peninsula Borough 2010 employment and earnings.....	3-99
Table 3.5-2. Cooper Landing income and employment, 2005–2009 .....	3-102
Table 3.5-3. Cooper Landing licensed businesses by industry, 2013.....	3-103
Table 3.5-4. Project costs by alternative (millions of dollars).....	3-108
Table 3.6-1. Build alternative design standard factor comparison .....	3-119
Table 3.6-2. Pullouts along the build alternatives.....	3-121
Table 3.6-3. Impacts of alternatives on existing intersection conflict points .....	3-123
Table 3.6-4. Intersection LOS comparison (2043) .....	3-124
Table 3.6-5. Level of service – Cooper Creek Alternative, 2043 .....	3-128
Table 3.6-6. Level of service – G South Alternative, 2043 .....	3-131
Table 3.6-7. Level of service – Juneau Creek Alternatives, 2043 .....	3-134
Table 3.7-1. Kenai River access and facilities.....	3-153
Table 3.7-2. Kenai Lake access and facilities.....	3-153
Table 3.7-3. River accidents occurring near the project area, 2004–2013 .....	3-156

Table 3.8-1. Park, recreation, and refuge properties and associated Section 4(f) applicability.....	3-165
Table 3.8-2. Kenai River angler days (effort expended by recreational anglers), 2005–2009, for early run and late run sockeye salmon .....	3-168
Table 3.8-3. Upper Kenai River total boat use, 2004 season.....	3-169
Table 3.8-4. Russian River angler days (effort expended by recreational anglers), 2005–2009, for early run and late run sockeye salmon .....	3-169
Table 3.8-5. Annual number of visitors at area facilities, 2008–2012.....	3-173
Table 3.10-1. Estimated harvest of fish and wildlife resources .....	3-217
Table 3.10-2. Estimated harvest of select fish and wildlife resources.....	3-217
Table 3.10-3. Estimated harvest of select fish resources, 2002/2003 .....	3-219
Table 3.10-4. Potential impacts to select fish and wildlife resource habitat by alternative.....	3-223
Table 3.13-1. Summary of direct and indirect impacts on water bodies under build alternatives .....	3-251
Table 3.15-1. Common noise sources and levels.....	3-269
Table 3.15-2. FHWA Noise Abatement Criteria .....	3-270
Table 3.15-3. Ambient noise levels measured away from the Sterling Highway.....	3-272
Table 3.15-4. No Build Alternative noise analysis results.....	3-274
Table 3.15-5. Summary of noise impacts .....	3-275
Table 3.15-6. Receptors with predicted noise impacts - Cooper Creek Alternative.....	3-277
Table 3.15-7. Receptors with predicted noise impacts, G South Alternative .....	3-279
Table 3.15-8. Receptors with predicted noise impacts, Juneau Creek and Juneau Creek Variant alternatives .....	3-281
Table 3.16-1. Visual assessment of Landscape Units.....	3-290
Table 3.16-2. Key Views – Visual Quality Evaluation (VQE) ratings.....	3-291
Table 3.16-3. Key View VQE rating by build alternative .....	3-293
Table 3.16-4. VPP score by alternative .....	3-294
Table 3.16-5. Key Views—Cooper Creek Alternative.....	3-297
Table 3.16-6. Key Views—G South Alternative .....	3-299
Table 3.16-7. Key Views—Juneau Creek Alternative.....	3-302
Table 3.16-8. Key Views—Juneau Creek Variant Alternative.....	3-307
Table 3.17-1. Known spill sites in the project area.....	3-312
Table 3.17-2. Sites in the project area in the Contaminated Sites Program Database .....	3-313
Table 3.17-3. Sensitive resources in spill migration pathway by alternative .....	3-317

Table 3.19-1. Flood levels on the Kenai River at Cooper Landing .....	3-331
Table 3.19-2. Area of floodplain and floodway encroachment for each build alternative (acres).....	3-332
Table 3.20-1. Mapped wetland types .....	3-340
Table 3.20-2. Mapped vegetation types .....	3-343
Table 3.20-3. USFS sensitive plant species in Chugach National Forest .....	3-345
Table 3.20-4. Invasive plant species with highest categories of invasiveness ranking documented in the project area .....	3-347
Table 3.20-5. Direct impacts on wetlands .....	3-349
Table 3.20-6. Indirect impacts on wetlands, acreage of wetlands adjacent to alternatives .....	3-349
Table 3.20-7. Areas of vegetation, by type removed under build alternatives (acres) .....	3-350
Table 3.20-8. Construction impacts to wetlands and ponds by build alternative (acres) .....	3-352
Table 3.20-9. Areas of construction disturbances to vegetation types under build alternatives (acres).....	3-353
Table 3.20-10. Approximate area of wetland fill—Cooper Creek Alternative .....	3-356
Table 3.20-11. Approximate area of wetland fill—G South Alternative .....	3-357
Table 3.20-12. Approximate area of wetland fill—Juneau Creek Alternative .....	3-359
Table 3.20-13. Approximate area of wetland fill—Juneau Creek Variant Alternative .....	3-360
Table 3.21-1. Fish species (known or which may occur), uses, and habitats in the project area .....	3-368
Table 3.21-2. Seasonal information for selected fish species in the project area .....	3-370
Table 3.21-3. Project area EFH represented by salmon streams .....	3-375
Table 3.21-4. Cooper Creek Alternative EFH impacts .....	3-384
Table 3.21-5. G South Alternative EFH impacts .....	3-386
Table 3.21-6. Juneau Creek and Juneau Creek Variant alternatives EFH impacts.....	3-387
Table 3.22-1. Mammals known or likely to occur in the project area, with agency status* ...	3-392
Table 3.22-2. Seasonal activities and associated habitat use for brown bears.....	3-395
Table 3.22-3. Reported Kenai Peninsula (Game Management Units 7 and 15) brown bear mortality and related factors for 1999–2009 .....	3-397
Table 3.22-4. ADF&G moose population estimates and status in the greater project area .....	3-399
Table 3.22-5. Seasonal activities and associated habitat use for moose .....	3-400
Table 3.22-6. Seasonal activities and associated habitat use for other mammals.....	3-401
Table 3.22-7. Year-round resident bird species in the project area .....	3-405
Table 3.22-8. Birds of conservation concern in the project area .....	3-406

Table 3.22-9. Summary of Build Alternative impacts to brown bear habitat.....	3-412
Table 3.22-10. Construction impacts on vegetated habitat under build alternatives .....	3-414
Table 3.22-11. Moose habitat lost under build alternatives (acres and percent of habitat type in project area) .....	3-424
Table 3.22-12. Moose habitat fragmentation by alternative .....	3-425
Table 3.22-13. Construction impacts on moose habitat under build alternatives .....	3-426
Table 3.22-14. Area of bird habitat eliminated (in acres).....	3-436
Table 3.22-15. Distances (in feet) from documented bald eagle nests in USFWS-defined buffer zones .....	3-437
Table 3.24-1. Applicable laws and related permits for the project.....	3-459
Table 3.26-1. Irreversible and irretrievable commitments of resources, major construction elements .....	3-470
Table 3.27-1. Geographic areas of analysis for cumulative effects analysis .....	3-474
Table 3.27-2. Likely maximum development in Unit 395, by alternative.....	3-479
Table 3.27-3. Existing actions or RFFAs potentially impacting resources .....	3-490
Table 3.27-4. Costs by alternative .....	3-495
Table 3.27-5. Statewide and project emissions potential, relative to global totals.....	3-502
Table 3.27-6. Wetland and vegetation impacts by alternative.....	3-507

## **List of Figures**

Figure 3.5-1. Kenai Peninsula Borough employment by sector, 2010 .....	3-100
Figure 3.5-2. Kenai Peninsula Borough government employment, 1994–2010.....	3-101
Figure 3.7-1. 10-Year monthly average discharge rate (cfs) for the Kenai River at Cooper Landing .....	3-154
Figure 3.7-2. Gage height fluctuations for the Kenai River at Cooper Landing, 2008–2013 .	3-155
Figure 3.8-1. Existing conditions and simulated conditions at Sportsman’s Landing.....	3-193
Figure 3.16-1. View from Quartz Creek Road/Sterling Highway intersection at Kenai Lake, looking west (Key View 1), an example of views in lower elevations of the project area. ....	3-288
Figure 3.16-2. View from Juneau Creek Falls informal overlook (near Resurrection Pass Trail) looking down Juneau Creek (Key View 12a), an example of views in higher elevations in the project area.....	3-288
Figure 3.17-1. Tanker truck traversing the Sterling Highway through the project area.....	3-314

Figure 3.22-1. The human population and number of brown bear DLP kills by decade on the Kenai Peninsula, Alaska .....	3-398
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## **List of Maps**

Map 3.1-1. Kenai Peninsula Borough and the project area .....	3-17
Map 3.1-2. Land use in the project area.....	3-19
Map 3.1-3. Land ownership in the project area .....	3-21
Map 3.1-4. Subdivisions in the project area .....	3-23
Map 3.2-1. Kenai National Wildlife Refuge management designations .....	3-69
Map 3.2-2. U.S. Forest Service land prescriptions .....	3-71
Map 3.2-3. Inventoried Roadless Areas.....	3-73
Map 3.2-4. <i>Kenai Area Plan</i> management units.....	3-75
Map 3.2-5. Kenai River Special Management Area (KRSMA) .....	3-77
Map 3.2-6. Cooper Landing planning areas.....	3-79
Map 3.3-1. Community features and facilities.....	3-91
Map 3.6-1. Transportation features in the project area.....	3-137
Map 3.6-2. Pullouts in the project area .....	3-139
Map 3.6-3. Intersection conflicts in the project area .....	3-141
Map 3.6-4. Cooper Creek Alternative 2043 level of service .....	3-143
Map 3.6-5. G South Alternative 2043 level of service .....	3-145
Map 3.6-6. Juneau Creek Alternative 2043 level of service.....	3-147
Map 3.6-7. Juneau Creek Variant Alternative 2043 level of service.....	3-149
Map 3.7-1. Kenai River and access points in the project area.....	3-161
Map 3.8-1. Recreation sites in the project area.....	3-197
Map 3.9-1. Historic properties and Areas of Potential Effect in the project area.....	3-213
Map 3.10-1. Subsistence overview map .....	3-231
Map 3.11-1. Utilities in the project area .....	3-237
Map 3.12-1. Avalanche paths in the project area.....	3-245
Map 3.13-1. Water bodies in the project area.....	3-259
Map 3.13-2. Wellhead protection zones in the project area .....	3-261
Map 3.15-1. Noise monitoring locations in the project area.....	3-283
Map 3.15-2. Noise impacts in the project area .....	3-285
Map 3.16-1. Landscape units and key views in the project area .....	3-309



Map 3.17-1. Hazardous material sites.....	3-321
Map 3.17-2. Buffer zone areas near Tier 1 streams .....	3-323
Map 3.19-1. Floodplain impacts in the project area .....	3-337
Map 3.20-1. Wetlands in the project area .....	3-361
Map 3.20-2. Vegetation types in the project area .....	3-363
Map 3.20-3. Wetland impacts in the project area .....	3-365
Map 3.21-1. Essential fish habitat in the project area.....	3-389
Map 3.22-1. Wildlife areas of predicted use.....	3-445
Map 3.22-2. Moose habitat in the project area .....	3-447
Map 3.22-3. Dall sheep habitat in the project area .....	3-449
Map 3.22-4. Eagle nest locations in the project area .....	3-451
Map 3.23-1. Coastal zone in the project area.....	3-457
Map 3.27-1. Cumulative boundaries.....	3-517
Map 3.27-2. Present and reasonably foreseeable future actions (RFFAs).....	3-519

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### **3 Affected Environment and Environmental Consequences**

Chapter 3 outlines the affected environment and environmental consequences for a wide range of resource categories spanning the human (social), physical, and biological environments. These environmental impact categories are subject to requirements specified in statutes, regulations, or executive orders, and are outlined within Federal Highway Administration (FHWA) Technical Advisory T6640.8a (1987) to be included in the analysis of an environmental impact statement (EIS). Each section includes a discussion of the affected environment to describe the base conditions and establish a baseline for analyzing the environmental impacts of the No Build Alternative and each build alternative.

Environmental consequences are outlined in terms of permanent direct and indirect impacts, temporary construction impacts, and cumulative impacts. Direct impacts are caused by the project and occur at the same time as project implementation, whereas indirect impacts are caused by the action but occur later in time or are farther removed in distance from the project. Construction impacts generally are temporary and occur solely because of construction activities. Cumulative impacts are the impacts on the environment that result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions (40 CFR Parts 1500-1508 2005).

These impacts are discussed for the No Build and the build alternatives. Often, environmental consequences of the build alternatives are similar in type and/or scope. Impacts common to all build alternatives are presented, and impacts specific to each build alternative follow. Chapter 3 tables and figures appear as they are cited in the text; maps follow each section. The project area is outlined on most of the maps referenced throughout Chapter 3 and is described in Chapter 1.

Certain resource categories are not addressed in this document either because they are not present or because their potential for impact is inconsequential. The following paragraphs summarize the resource categories that were deemed non-issues and the justification for removing them from further analysis.

**Farmland.** No prime farmland, unique farmland, or farmland of statewide importance has been designated in Alaska. Project alternatives would have no direct, indirect, construction, or cumulative impacts on farmlands or agriculture.

**Joint Development.** The proposed project would not be planned, developed, or constructed in conjunction with any other projects.

**Wild and Scenic Rivers.** No designated Wild and Scenic Rivers occur in the project area; however, portions of the Russian River have been recommended by the U.S. Forest Service (USFS) for designation as a Recreational and Wild River as classified under the Wild and Scenic Rivers Act of 1968 (Johansen, personal communication 2011). None of the alternatives would affect the portions of the Russian River recommended as a Recreational and Wild River.

**Coastal Barriers.** No coastal barriers that provide protection for diverse aquatic habitats are located in Alaska. Project alternatives would have no impacts on coastal barriers.

**Threatened and Endangered Species.** No Federally designated threatened or endangered species of plants or animals occur in the project area. Further discussion of species of concern appears in Section 3.20, Wetlands and Vegetation, and Section 3.22, Wildlife.

### **3.1 Land Ownership and Land Use**

Section 3.1 discusses land ownership and general land use patterns in the project area. More specific discussion of land use plans and policies appears in Section 3.2.

#### ***3.1.1 Affected Environment***

##### **3.1.1.1 Overview**

The Kenai Peninsula Borough (Borough) is located in Southcentral Alaska. Cook Inlet is a major body of Pacific Ocean seawater that bisects the Borough and defines the northwestern side of the Kenai Peninsula (see Map 3.1-1). About 53 percent of the land within the Borough is on the Kenai Peninsula, and the remaining 47 percent lies on the west side of Cook Inlet. The majority of the population resides on approximately 20 percent of the land area and is concentrated primarily along the Kenai Peninsula coast and major river systems.

The Sterling Highway MP 45–60 project area is rural with low human population density. Land use on all lands, including Chugach National Forest (CNF) and Kenai National Wildlife Refuge (KNWR), is primarily undeveloped. Limited residential and commercial development occurs primarily near the outlet of Kenai Lake, between approximately Milepost (MP) 47 through 49 (Map 3.1-2). The undeveloped areas include subalpine forests, mountains, and rivers. The primary use of these undeveloped areas is recreational land uses and wildlife habitat (USFS 2002a). Residential development is limited almost exclusively to the unincorporated community of Cooper Landing. Commercial establishments cater primarily to tourism and recreational fishing. Minor logging and mining also occur on private property and USFS-owned land.

The total land area of the Borough is 10.5 million acres, and the Federal government owns 6.8 million acres, or 65 percent of that land. The State owns or will own 2.2 million acres, or 21.3 percent of Borough, and the State has designated 25 percent of State-owned land as State parks and game refuges or Critical Habitat Areas. The Borough owns 73,802 acres, or 0.7 percent of the land. In the private sector, village and regional Native corporations own approximately 1 million acres or 11 percent of the land and have title to 230,000 acres of the subsurface estate.

Approximately 95 percent of the 13,500 acres of land<sup>1</sup> situated within the Sterling Highway MP 45–60 project area is publicly owned. Five percent is privately owned. Map 3.1-3 and Table 3.1-1 show land ownership in the project area by government agency or private entity.

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<sup>1</sup> The Borough parcel database includes data primarily for uplands. The total acreage of lands in the database is 13,500. Including the submerged lands of Kenai Lake and Kenai River and the acreage contained in the Alaska Department of Transportation and Public Facilities roadway easements, the total acreage within the project area is 14,961.

**Table 3.1-1. Land ownership and land use in the project area**

<b>Land Ownership or Use</b>	<b>Acreage</b>	<b>Percent of Project Area (%)</b>
<b>Federal</b>	<b>9,008</b>	<b>66.7</b>
USFS (CNF)	6,086	45.1
Residential	2	-
Institutional <sup>a</sup>	19	0.1
Vacant	6,065	44.9
USFWS (KNWR)	2,922	21.6
Vacant	2,922	21.6
<b>State<sup>b</sup></b>	<b>1,720</b>	<b>12.7</b>
Residential	37	0.3
Institutional <sup>a</sup>	9	0.1
Vacant	1,674	12.4
<b>Borough</b>	<b>2,013</b>	<b>14.9</b>
Residential	36	0.3
Institutional <sup>a</sup>	7	0.1
Vacant	1,970	14.6
<b>Native (Cook Inlet Region, Inc.)</b>	<b>61</b>	<b>0.5</b>
Vacant	61	0.5
<b>Private</b>	<b>698</b>	<b>5.2</b>
Commercial	103	0.8
Institutional <sup>a</sup>	23	0.2
Residential	473	3.5
Vacant	99	0.7
<b>Total</b>	<b>13,500</b>	<b>100.0</b>

Source: Kenai Peninsula Borough (2013). Geographic Information System (GIS) analysis by HDR.

<sup>a</sup> Educational, religious, health, and government facilities

<sup>b</sup> Acreage totals are based on 2013 Borough parcel data. Roadway easements and the Kenai River and Kenai Lake are not counted in this total; the project area is approximately 14,961 acres in total.

### **3.1.1.2 Federal Ownership and Land Uses**

Federal lands in the project area are managed by two Federal agencies, the U.S. Department of Agriculture (USDA) and the U.S. Department of the Interior (DOI). USDA lands are managed by the USFS as CNF, and DOI lands are managed by the U.S. Fish and Wildlife Service (USFWS) as the KNWR (see Map 3.1-3). The CNF is the nation's second-largest national forest, encompassing 5.6 million acres. The project area contains approximately 6,086 acres of CNF

land. CNF extends from the Kenai Peninsula eastward to Cordova and the Copper River Delta. The Sterling Highway passes through CNF land in a right-of-way of highly variable width.

KNWR lands lie mainly on the western slopes of the Kenai Mountains and the forested lowlands bordering Cook Inlet. In the project area, the Sterling Highway lies within the KNWR between MP 55 and MP 58, within a right-of-way easement. The State of Alaska owns land rights for maintenance and operation of the Sterling Highway. The history of the establishment of the right-of-way is complex and the subject of a legal opinion from the Alaska Attorney General's office (Sullivan and Goldsmith 2014). The State and USFWS agree that a right-of-way exists and that it passed to the State of Alaska at statehood in 1959 (DOT&PF 2014a). There is a separate 1971 right-of-way agreement between USFWS and the State that provides additional information on rights and responsibilities to manage and approve transportation work within the right-of-way.

Approximately 22 percent of the project area (2,922 acres) is KNWR lands. Outside the existing Sterling Highway right-of-way and parallel power transmission line, the portion of the project area within the KNWR is primarily undeveloped land. The KNWR area north of the power transmission line is the Mystery Creek Wilderness, a Federally designated Wilderness area. South of the highway and Kenai River is another KNWR Wilderness unit, the Andrew Simons Wilderness. The USFWS manages Wilderness to preserve the pristine and unmodified character of these areas under provisions of The Wilderness Act (16 USC 23) and the Alaska National Interest Lands Conservation Act (ANILCA).

### **3.1.1.3 State Ownership and Land Uses**

Lands owned by the State of Alaska are shown on Map 3.1-3. In addition, there are lands selected by the State but not yet conveyed from the Federal government, and these are shown along with State-owned lands on Map 3.2-4, following Section 3.2, Land Use Plans and Policies. Various land management units are designated within the *Kenai Area Plan for State Lands* (DNR 2001), and larger units are shown on the maps. Based on Borough Geographic Information System (GIS) parcel data, approximately 1,720 acres of State-owned land are within the project area, and the majority of this land is undeveloped. The project area also contains the Kenai River and Kenai Lake, which are State-owned except within the KNWR boundary, where the United States owns submerged lands. These are not included in the Borough parcel records. The submerged lands are among the most prominent State lands in the area and are a designated unit of the State park system called the Kenai River Special Management Area (KRSMA). The State also owns several other parcels dedicated to specific public uses, including the Cooper Landing and Sportsman's Landing public boat launch ramps on the Kenai River, several small recreation sites, and a 2,200-foot-long gravel runway (Unit 398) off Quartz Creek Road (Quartz Creek Airport; (DNR 2001)). The State owns land rights for transportation purposes within the existing Sterling Highway right-of-way on CNF and KNWR and on other lands in the project area.

The State of Alaska land holdings in the project area include Management Unit 395 (labeled on Map 3.2-4). Unit 395 is noted in the *Kenai Area Plan* as likely land for settlement (DNR 2001). Final disposition of this parcel to the Kenai Peninsula Borough for settlement is partly dependent on this project. Section 3.2.1.6, in Land Use Plans and Policies, further describes the planning intent related to Unit 395.

Most other State lands are managed as if they were part of KRSMA and are recommended for addition to KRSMA. The Alaska Legislature to date has not acted to formally include these lands in KRSMA.

#### **3.1.1.4 Kenai Peninsula Borough Ownership and Land Uses**

Borough lands in the project area were acquired primarily from the State of Alaska under the Mandatory Borough Act of 1964 and the Municipal Land Entitlement Act of 1978. The Borough was able to select 156,000 acres of State land under these acts, and Borough selections include lands in and around the unincorporated community of Cooper Landing (KPB 2005b). The Borough currently owns about 15 percent (2,013 acres) of the land in the project area. See Map 3.1-3.

The Birch and Grouse Ridge Subdivision was developed as part of the 2005 Borough land sale and has increased residential housing in the Cooper Landing area (Map 3.1-4). Portions of this subdivision are platted for residential lots and access roads, but the Borough has not yet completed the road (Slaughter Ridge Road, Cecil Road) or offered the lots for sale. Other Borough land sales include the development of the Russian Gap Subdivision, just outside the project area to the east, in 2001.

#### **3.1.1.5 Private Ownership and Land Uses, Including Native Corporation Lands**

The project area contains 698 acres of private property, mostly clustered around the Cooper Landing Bridge and Bean Creek Road, and around Quartz Creek near the eastern end of the project area. Approximately 86 percent of the privately owned land within the project area contains some type of structure, primarily residences, and the remaining 14 percent is vacant.

The Alaska Native Claims Settlement Act formed regional and village Native corporations across Alaska. Cook Inlet Region, Inc. (CIRI) is the regional corporation in the project area. Native corporation lands are private lands that warrant special mention.

CIRI lands within the project area, as shown on Map 3.1-3, include Tract A near MP 55 and Tract B near MP 53. Disputes over Native land claims were resolved through the Russian River Land Act passed by Congress (Pub. L. 107-362 2002). Under an agreement ratified by the act, CIRI received a 42-acre parcel immediately north of Sportsman's Landing (Tract A) and a 20-acre parcel immediately east of Schooner Bend Bridge (Tract B), as well as title to a broad area (approximately 500 acres) of the archaeological estate of the Sqilantnu Archaeological District. The agreement provides for access easements across USFS lands to the 42-acre parcel from the existing Sterling Highway or a realigned Sterling Highway, or both (DOT&PF was not a party to the agreement). As outlined in the agreement, CIRI has plans to develop an archaeology research center, visitor center (to operate jointly with the USFS and the KNWR), and lodge near the Russian River-Kenai River confluence on Tract A. No specific plans or timeline are known regarding development.

The Russian River Land Act agreement provided for CIRI and the U.S. Secretary of Interior to undertake a land exchange of KNWR lands, including designated Wilderness lands, for CIRI lands valuable to the KNWR. No further Congressional action would be necessary to undertake such an exchange. The Act identifies "lands within the Kenai National Wildlife Refuge located north of, and immediately bordering the Sterling Highway" as one of two possible areas for land exchange. Up to 3,000 acres may be exchanged. CIRI's original selections in this area were at the far eastern edge of the KNWR and therefore effectively adjacent to the area of the 42-acre

parcel on adjacent USFS land. According to the agreement, land added to the KNWR “must be found by the [US]FWS to be of higher value fish and wildlife habitat than those lands to be conveyed to CIRI in exchange.” The agreement also includes the authority “to remove lands conveyed to CIRI from the Kenai Wilderness Area and the Kenai National Wildlife Refuge” and to include qualifying lands acquired from CIRI in the Kenai Wilderness Area. The agreement ratified by Congress authorizes a change to the official boundary of the KNWR and Wilderness areas to include new areas acquired by DOI and to exclude lands acquired by CIRI. No exchange has occurred to date, although both CIRI and the KNWR have acknowledged the potential for such an exchange in Sterling Highway project discussions, and CIRI formally requested (Cunningham 2010) continued consideration of the Juneau Creek Alternative that would pass through a portion of the KNWR area identified as exchangeable lands.

### **3.1.2 Environmental Consequences**

#### **3.1.2.1 No Build Alternative**

##### **Direct and Indirect Impacts**

Under the No Build Alternative, no land acquisition for right-of-way would be necessary (land acquisition as a result of the routine maintenance actions is discussed in Section 3.27, Cumulative Impacts). This alternative would not directly affect any private land use or development, and no acquisition of public lands would be required. Other regional transportation improvements in the Borough, such as the improvements to the Sterling Highway between MP 58 and 79, would be expected to be implemented as programmed in the Statewide Transportation Improvement Program. Due to population growth and transportation projects occurring in the future, land ownership and land use patterns would continue to change according to adopted local land use plans under the No Build Alternative.

No change in ownership is expected under the No Build Alternative, and no land use changes would be induced by selection of the No Build Alternative.

#### **3.1.2.2 Issues Applicable to the Build Alternatives**

This section describes impact issues common to all build alternatives. Although the actual impacts may differ among the build alternatives, as described in the following alternative-specific sections, this section presents a summary of acreages of impact by land owner and presents common background.

##### **Federal, State, Borough, and Private Land Ownership**

All build alternatives would directly incorporate private and public lands into a new and expanded highway right-of-way, conferring an interest in land ownership to the Alaska Department of Transportation and Public Facilities (DOT&PF) and in many cases converting land use to a transportation use instead of another use, such as recreation, wildlife habitat, or residential development. The project alternatives would require 2–3 percent of the 13,500 acres of land in the area (see Map 3.1-3).

Table 3.1-2 shows the acreage of land under each build alternative that would be acquired for highway right-of-way, and the type of land owner impacted. Federal land used would remain under Federal ownership, and a highway easement would be conveyed to the State. The DOT&PF would acquire the non-Federal lands needed for the right-of-way. Private land owners and the Borough would be compensated for lands required for highway right-of-way at fair



market value in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

**Table 3.1-2. Lands required for build alternatives**

Ownership (approximate project area acreage <sup>a</sup> )	Land Required (acreage, % of total by ownership)							
	Cooper Creek		G South		Juneau Creek		Juneau Creek Variant	
Federal (9,008)	54	<1%	90	1%	167	2%	115	1%
USFS	54	<1%	90	1%	134	1%	115	1%
USFWS	-	-	-	-	33	<1%	-	-
State (1,720)	9	<1%	43	3%	90	5%	92	5%
Borough (2,013)	93	5%	126	6%	129	6%	129	6%
Native—CIRI (61)	1	2%	1	2%	-	-	12	19%
Private (698)	57	8%	<1	<1%	<1	<1%	<1	<1%
<b>Total (13,500)</b>	<b>214</b>	<b>2%</b>	<b>261</b>	<b>2%</b>	<b>387</b>	<b>3%</b>	<b>349</b>	<b>3%</b>

<sup>a</sup> Borough parcel data do not align perfectly with project aerial photography and project engineering, which have a higher level of accuracy. For this reason, GIS analysis that compares the project right-of-way with Borough parcels is approximate in this table and has been modified to align with preliminary engineering data. Acquisition data by parcel are presented in Appendix B of this SEIS.

Table 3.1-2 presents, by land use, the amount of land that would be converted to transportation use within the project area. As indicated in the table, most of the acreage required for any of the alternatives is vacant. Section 3.4 discusses housing and relocation associated with private land impacts, and Section 3.5 discusses commercial property/business (economic) impacts.

**Table 3.1-3. Land uses converted to transportation use**

Land Use (approximate project area acres)	Right-of-Way Acquired (acres, project area %)							
	Cooper Creek		G South		Juneau Creek		Juneau Creek Variant	
Commercial (103)	1	1%	-	-	-	-	-	-
Institutional (58)	<2	2%	-	-	-	-	-	-
Residential (548)	41	8%	<2	<1%	<2	<1%	<2	<1%
Vacant (12,791)	170	1%	260	2%	385	3%	347	3%
<b>Total (13,500)</b>	<b>214</b>	<b>2%</b>	<b>261</b>	<b>2%</b>	<b>387</b>	<b>3%</b>	<b>349</b>	<b>3%</b>

## State Land Use

A State land issue applicable to all alternatives, but in different ways, is the disposition of Management Unit 395. As described in Section 3.1.1 and mapped in Section 3.2 as Map 3.2-4, this unit has been identified in the *Kenai Area Plan* as a potential settlement area (DNR 2001). As a cooperating agency for this project, DNR indicated that its Final Finding and Decision conditionally approved conveyance of the 1,087-acre Unit 395 to the Kenai Peninsula Borough

(Borough), but postponed transferring management authority to the Borough until the alignment of this project is determined and a specific route identified. The *Kenai Area Plan* is quoted and thoroughly discussed in Section 3.2.1.5 of Land Use Plans and Policies. The *Kenai Area Plan* assumed that this project would provide improved access to the property, and thereby could influence residential growth on Unit 395.

However, DOT&PF proposes to reserve roadway access rights by creating a controlled access facility on all new segments of all build alternatives. Ingress/egress would be regulated, and any new access points would need to address regional transportation needs. No driveways or side roads would be allowed direct access to the new highway (except for those planned as mitigation as a part of this project, such as trailhead access).

Under any alternative, the Department of Natural Resources (DNR) or the Borough could apply for a driveway permit for connection to the “Old Sterling Highway” or to a segment of the selected alternative that was built on the existing alignment, and this would allow access to Unit 395. This is the same access mechanism available today. In this way, the project is not expected to influence ease of development. By not changing the access to these units, the build alternatives would have no effect on future disposition or development of these lands. Development of Unit 395 may occur depending on DNR, USFS, and Borough actions independent of this project, and these scenarios are addressed under Section 3.27, Cumulative Impacts.

#### **Private and Native Corporation Lands (Russian River Land Act)**

A second issue broadly applicable to all build alternatives is the potential interplay between CIRI lands and the project. The Russian River Land Act resulted in CIRI taking ownership of a 42-acre parcel (Tract A) and a 20-acre parcel (Tract B) of CNF land near the CNF’s western boundary. Map 3.1-3 shows the locations of these parcels, near MP 55 and MP 53, respectively. Under any alternative, including the No Build Alternative, the provisions of the Russian River Land Act could lead to CIRI’s planned development of an archaeological research center and visitors’ center, and possibly a lodge on the bluff above Sportsman’s Landing near MP 55 on Tract A. CIRI’s development may affect the final design of this project, or the project may affect the access and site layout for the CIRI development, as further described under each alternative, below.

The Russian River Land Act also provided for CIRI and USFWS to conduct a land exchange of Federal Wilderness lands to the west of Tract A on KNWR land without further Congressional approval if the exchange was beneficial to both parties and there was no net loss of Wilderness lands and values. If such an exchange took place before this project was complete, it could affect the project alternatives and the alternatives selection and approval process in this location. Under any alternative, including the No Build Alternative, an exchange would alter the land ownership pattern and would change KNWR land status from Federally designated Wilderness (with the protections that designation affords) to more easily developable private land. This potential change in status has had Congressional approval since 2002, but no action has occurred to date. It is possible this project would spur the two parties to undertake the land exchange. The change could affect the potential for land development near one of the most popular recreation points along the Kenai River and highway (Sportsman’s Landing/Russian River Ferry), where the Russian and Kenai rivers meet.

## Resolution of Land Use Issues

Another general land use topic applicable to all build alternatives is resolution of land use issues. Like the *Kenai Area Plan* and *Russian River Lands Act* discussed above, many of the local, State, and Federal land use plans for the project area hinge in part on whether and where any new sections of the Sterling Highway MP 45–60 Project will be built. One beneficial impact of the project under any alternative would be resolving the uncertainty in the area regarding land use. With a Sterling Highway decision, land managers could proceed with greater confidence to plan for the future of the area. See the discussion of specific land use plans in Section 3.2.

## Construction Impact Issues Applicable to All Build Alternatives

Table 3.1-4 indicates acreage of lands needed from the various owners of public land for construction related activity. This is for construction staging areas, temporary access roads, and material disposal sites (for vegetation, organic soils, and other soils not soil and material not useful in construction). While parts of some of these areas would overlap the project right-of-way, these areas would be principally outside the proposed project right-of-way for each of the build alternatives. These areas would be located on public lands and would change the appearance of and later use potential or use pattern of the lands. Important impacts to land use are noted under discussion of each alternative in the sections below. Map 2.5-7 in Chapter 2, Alternatives, illustrates these areas.

**Table 3.1-4. Estimated land use construction impacts**

Alternative	Total Area <sup>a</sup> (acres)	Number of Staging Areas, Acreage	Disposal Sites <sup>b</sup> Acreage, Ownership	Temporary Access Road (acres)
No Build	0	NA	NA	NA
Cooper Creek	62.9	8 areas, 11.1 acres	5.1, USFS 43.9, Borough	2.8
G South	79.8	9 areas, 19.9 acres	30.2, USFS 27.2, State	2.5
Juneau Creek	73.3	4 areas, 22.1 acres	19.9, State 27.2, State	4.1
Juneau Creek Variant	73.3	4 areas, 22.1 acres	19.9, State 27.2, State	4.1

<sup>a</sup> Construction area totals include sites located both within and outside of proposed rights-of-way.

<sup>b</sup> Disposal areas are for cleared vegetation and soils that cannot be used for construction.

### 3.1.2.3 Cooper Creek Alternative

#### Direct and Indirect Impacts

The amount of land by ownership that would be acquired for the highway right-of-way for the Cooper Creek Alternative is presented in Table 3.1-2. Land that would be acquired for right-of-way associated with the segment built on a new alignment is split between Borough lands, with the most acreage, followed by private lands, and then by Federal lands. A small amount of State and Native land would be used. The other segments of the Cooper Creek Alternative, where it

would follow the existing alignment, would use relatively small amounts of public and private lands for widening and realigning.

Public access to lands along the segment built on a new alignment would be limited to a new pullout trailhead at Stetson Creek Trail (see Section 3.8, Park and Recreation Resources, and Chapter 4, Section 4(f) Evaluation). In portions of the reconstructed Sterling Highway, access to existing driveways and side streets would be maintained and adjacent properties could develop new access points, just as they can today or under the No Action Alternative.

**Federal Lands.** As indicated in Table 3.1-2, USFS lands would be overlain with a DOT&PF transportation easement, and land use would convert to transportation. FHWA has a nationwide agreement with the USFS for appropriation of national forest lands. Effects to land management plans and policies are addressed in Section 3.2.

**State Lands.** While the segment of the Cooper Creek Alternative built on a new alignment would pass through a portion of Unit 394B, vehicles would not be able to directly access the unit from this segment. This is consistent with the intent of the *Cooper Landing Land Use Classification Plan*, which calls for “NO access to or from the new alignment other than the departure from the existing road at either end of the bypass” (CLAPC 1996; emphasis in the original document). However, the segment built on a new alignment would join the existing alignment within Unit 394B, and it would be possible at that point to gain access to the unit, if it were ever slated for development. The segment built on a new alignment would use some land from the unit and would slightly restrict access options. However, overall, conditions would remain largely as they are today.

**Borough Lands.** A 43.9-acre disposal area for vegetation and soils that cannot be used in the road construction would be located on vacant Borough land classified in part for potential future residential use. This disposal area would be located just east of the proposed Cooper Creek Bridge (see Map 2.5-7, following Chapter 2, and Map 3.2-6, following Section 3.2). A permit would be necessary to dispose of earth materials at this location, but DOT&PF would not acquire the property. While land ownership would not be expected to change, the planned land use pattern likely would change, which could have an adverse effect on planned community growth and development. Use of a large area of reasonably flat land for disposal of unusable material could make it difficult to later use the land for roads and residences or other community purposes. Use of these lands for transportation-related material disposal would require some re-planning by the Borough and could slightly limit the overall growth potential of Cooper Landing.

Because DOT&PF would reserve roadway access rights along the segment of the Cooper Creek Alternative built on a new alignment, the alternative would not indirectly induce community growth and land use changes in the project area because access to previously inaccessible land would not be provided.

**Private and Native Corporation Lands.** As indicated in Table 3.1-2, the Cooper Creek Alternative would use private land within Cooper Landing. The associated housing and economic impacts are discussed in Sections 3.4 and 3.5, respectively. All build alternatives would impact four vacant private parcels located at the eastern end of the alignment, on the north side of Kenai Lake, and right-of-way requirements would affect only a small portion of each of the individual parcels. The Cooper Creek Alternative also would require acquisition of approximately 0.7 acre of a 42-acre CIRI-owned parcel, known as Tract A, as well as 0.15 acre of CIRI's Tract B. These small, sliver acquisitions are along the parcel perimeters and, while

CIRI development plans are unknown, should have little effect on CIRI development plan opportunities.

### **Construction Impacts**

A temporary access road and bridge construction staging area would be necessary in the Cooper Creek valley and would be removed and replanted following construction. See Table 3.1-4.

Other minor land impacts are likely to occur in limited locations during construction where construction may need to occur outside the new highway right-of-way, usually immediately adjacent to the right-of-way. For all such areas, DOT&PF or the construction contractor typically would negotiate a temporary construction easement or permit from the land owner.

### **Mitigation**

Private and Borough land owners would be compensated at fair market value for land and residences acquired by the project. See the discussion under Section 3.4, Housing and Relocation.

#### **3.1.2.4 G South Alternative**

##### **Direct and Indirect Impacts**

The amount of land by ownership that would be acquired for the highway right-of-way for the G South Alternative is presented in Table 3.1-2. It is comprised of Borough lands (with the most acreage), followed by Federal lands, and then by State lands. Almost no private or Native corporation land would be acquired. This would result in a change in public land ownership from current uses to transportation uses.

Public access to lands along the segment built on a new alignment would be limited to a new trailhead for the Bean Creek Trail (see Section 3.8, Park and Recreation Resources, and Chapter 4, Section 4(f) Evaluation). In segments of the alternative built on the existing alignment, access to existing driveways and side streets would be maintained, and adjacent properties could develop new access points, just as they can today or as they could under the No Build Alternative.

**Federal Lands.** As indicated in Table 3.1-2, USFS lands would be overlain with a DOT&PF transportation easement, and land use would convert to transportation. FHWA has a nationwide agreement with the USFS for appropriation of national forest lands. Lands in the lower Juneau Creek area are of concern to the USFS as bear habitat, discussed below under Construction Impacts and in more detail in Section 3.22, Wildlife. Effects to land management plans and policies are addressed in Section 3.2.

**State Lands.** Traffic on the G South Alternative would rejoin the existing alignment at the edge of State Management Unit 394B (refer to Map 3.2-4 following Section 3.2). It would be possible at that point to gain access to the unit, if it were ever slated for development. The segment built on a new alignment would use some land from the unit, reducing the developable land area slightly. Overall, conditions would remain largely as they are today.

**Borough Lands.** A platted cul-de-sac and two platted lots (not yet sold) at the Birch and Grouse Ridge Subdivision would be acquired for the project and could not be developed. Also, the platted northern extension of Slaughter Ridge Road would be bisected and likely could not be completed as planned. About five lots would be halved and might need to be re-platted to keep

them from being too small for practical development. Reservation of access rights (no driveway or side road connections) on the segment of this alternative built on a new alignment also would mean that lots with highway frontage could not get access from the new highway segment. See Map 3.1-4 for an overview of the location of these impacts. Additional details can be found in the *Conceptual Stage Relocation Study* (Appendix B of this SEIS) and the *Preliminary Engineering Report* (HDR 2014a). The use of these lands for the G South Alternative may require re-platting and would reduce lot sizes and the number of lots available. The lots would be adjacent to the main highway instead of rural lots near the end of Slaughter Ridge Road (access still would be from Slaughter Ridge Road). Because DOT&PF would reserve access rights along the segment of the G South Alternative built on a new alignment, the alternative would not induce community growth and land use changes in the project area because access to previously inaccessible land would not be provided.

**Private and Native Corporation Lands.** The G South Alternative would use little private land. All build alternatives would impact four vacant private parcels located at the eastern end of the alignment, on the north side of Kenai Lake, and right-of-way requirements would affect only a small portion of each of the individual parcels. The G South Alternative would require acquisition of approximately 0.7 acre of a 42-acre CIRI-owned parcel, known as Tract A, as well as 0.15 acre of CIRI's Tract B. These small, sliver acquisitions are along the parcel perimeters and, while CIRI development plans are unknown, these acquisitions should have little effect on CIRI development plan opportunities.

### **Construction Impacts**

As indicated a few paragraphs above, land along lower Juneau Creek owned mostly by USFS and in part by the State would be used for construction of the Juneau Creek Bridge. This would include a temporary construction access road, a bridge construction staging area at the creek, and a large area for disposal of vegetation and soils not useable in road construction (see Map 2.5-7). Land outside the proposed highway right-of-way would be expected to remain in Federal ownership, but the surface appearance and land use pattern may change. This area is of concern to USFS and the Alaska Department of Fish and Game as important bear habitat, as further discussed in Section 3.22, Wildlife.

Other minor land impacts are likely to occur in limited locations during construction where construction may need to occur outside the new highway right-of-way, usually immediately adjacent to the right-of-way.

For all such areas, DOT&PF or the construction contractor typically would negotiate a temporary construction easement or permit from the land owner.

### **Mitigation**

Private and Borough land owners would be compensated at fair market value for land acquired by the project. Mitigation of impact to USFS lands west of Juneau Creek are discussed in Section 3.22, Wildlife.

#### **3.1.2.5 Juneau Creek Alternative**

##### **Direct and Indirect Impacts**

The amount of land by ownership that would be required for the highway right-of-way for the Juneau Creek and Juneau Creek Variant alternatives is presented in Table 3.1-2. Land that would

be required is comprised of Federal lands, with the most acreage, followed by Borough lands, and then by State lands. The Juneau Creek Alternative would require less than 1 acre of private land.

Public access to lands along the segment built on a new alignment would be limited to a new trailhead for the Resurrection Pass Trail and a pullout east of Juneau Creek Canyon (see Section 3.8, Park and Recreation Resources, and Chapter 4, Section 4(f) Evaluation).

**Federal Land.** As indicated in the table, USFS and USFWS lands would be overlain with a DOT&PF transportation easement, and land use would convert to transportation. FHWA has a nationwide agreement with the USFS for appropriation of national forest lands. Use of KNWR lands, including designated Wilderness, would require issuance of a transportation easement under ANILCA Title XI. See the discussion of Title XI in Section 3.2. See Section 3.2 also for land management plan implications in general. Land use patterns on USFS lands likely would change, particularly regarding the Resurrection Pass Trail. See the Parks and Recreation section (3.8) and Chapter 4, Section 4(f).

**State Land.** The Juneau Creek Alternative would pass through and use land from State Management Unit 395. A disposal site is proposed in this area for vegetation and soils that cannot be used in project construction. The highway right-of-way and the separate disposal site would reduce the amount of land available for potential residential development within Unit 395. The alternative would not provide access directly to this area of State land; access potential would remain as it is today from the existing (“old”) Sterling Highway. This is consistent with the intent of the *Cooper Landing Land Use Classification Plan*, which calls for “NO access to or from the new alignment other than the departure from the existing road at either end of the bypass” (CLAPC 1996); emphasis in the original document). DOT&PF would build a bridge or use a large culvert to separate traffic on the USFS’s West Juneau Road from the highway traffic, with no direct connection between the two, thereby maintaining existing conditions.

**Borough Land.** A platted cul-de-sac and two platted lots (not yet sold) at the Birch and Grouse Ridge Subdivision would be acquired for the project and could not be developed. Also, the platted northern extension of Slaughter Ridge Road would be bisected and likely could not be completed as planned. About five lots would be halved and might need to be re-platted to keep them from being too small for practical development. Reservation of access rights (no driveway or side road connections) on the segment of this alternative built on a new alignment also would mean that lots with highway frontage could not get access from the new highway segment. Map 3.1-4 provides an overview of the location of these impacts. Additional details can be found in the *Conceptual Stage Relocation Study* (Appendix B of this SEIS) and the *Preliminary Engineering Report* (HDR 2014a). The use of these lands may require re-platting and would reduce lot sizes and the number of lots available. The lots would be adjacent to the main highway instead of rural lots near the end of Slaughter Ridge Road (access still would be from Slaughter Ridge Road). Because DOT&PF would reserve access rights along the segment built on a new alignment, the alternative would not indirectly induce community growth and land use changes in the project area because access to previously inaccessible land would not be provided.

**Private and Native Corporation Land.** All build alternatives would impact four vacant private parcels located at the eastern end of the alignment, on the north side of Kenai Lake, and right-of-way requirements would affect only a small portion of each of the individual parcels. Less than one acre of private land would be acquired for the project right-of-way. The new highway would

run immediately adjacent to the northern boundary of CIRI Tract A (see Map 3.1-3) but would not provide access to the parcel. There would be no change in CIRI's ability to get access to the parcel from the existing ("old") highway.

### **Construction Impacts**

Estimated impacts are presented in Table 3.1-4, above. A material disposal site on State land about 2 miles west of Juneau Creek and another located east of Juneau Creek would change the surface appearance of the land but not land ownership, and there would be no substantial change in land use in these mostly undeveloped areas. A staging area within several hundred feet west of Juneau Creek is proposed to be moved into the Juneau Falls Recreation Area and combined with development of a new trailhead there to avoid clearing, development, and wetland impacts in two locations—see the mitigation discussion in Section 4.6.8.

Other minor land impacts are likely to occur in limited locations during construction where construction may need to occur outside the new highway right-of-way, usually immediately adjacent to the right-of-way.

For all such land uses, DOT&PF or the construction contractor typically would negotiate a temporary construction easement or permit from the land owner.

### **Mitigation**

Private and Borough land owners would be compensated at fair market value for land acquired by the project. Connection under or over the new highway would be provided for existing USFS West Juneau Road public easements that pass through State Unit 395 to maintain access to Unit 395 and beyond to USFS lands.

#### **3.1.2.6 Juneau Creek Variant Alternative**

##### **Direct and Indirect Impacts**

The amount of land by ownership that would be required for the highway right-of-way for the Juneau Creek Variant Alternative is presented in Table 3.1-2. Land that would be required is comprised of Borough lands, with the most acreage, followed by Federal lands, and then State lands. The Juneau Creek Variant Alternative would require approximately 13 acres of land under private ownership, 12 acres of which would be acquired from the CIRI-owned Tract A parcel near existing MP 54.5 (see Map 3.1-3).

Public access to lands along the segment built on a new alignment would be limited to a new trailhead for the Resurrection Pass Trail and a pullout east of Juneau Creek Canyon (see Section 3.8, Park and Recreation Resources, and Chapter 4, Section 4(f) Evaluation).

**Federal Lands.** As indicated in Table 3.1-2, USFS lands would be overlain with a DOT&PF transportation easement, and land use would convert to transportation. FHWA has a nationwide agreement with the USFS for appropriation of national forest lands. There would be no use of USFWS land outside the existing highway right-of-way, and therefore no land ownership or land use impact.

**State Land.** The Juneau Creek Variant Alternative would pass through and use land from State Management Unit 395. A disposal site also is proposed in this area for vegetation and soils that cannot be used in project construction. The highway right-of-way and the separate disposal site would reduce the amount of land available for potential residential development within Unit 395.



The alternative would not provide access directly to this area of State land; access potential would remain as it is today from the existing (“old”) Sterling Highway.

This is consistent with the intent of the *Cooper Landing Land Use Classification Plan*, which calls for “NO access to or from the new alignment other than the departure from the existing road at either end of the bypass” (CLAPC 1996) (emphasis in the original document). DOT&PF would build a bridge or use a large culvert to separate traffic on the USFS roads from the highway traffic, with no direct connection between the two, thereby maintaining existing conditions.

**Borough Lands.** A platted cul-de-sac and two platted lots (not yet sold) at the Birch and Grouse Ridge Subdivision would be acquired for the project and could not be developed. Also, the platted northern extension of Slaughter Ridge Road would be bisected and likely could not be completed as planned. About five lots would be halved and might need to be re-platted to keep them from being too small for practical development. Reservation of access rights (no driveway or side road connections) on the segment of this alternative built on a new alignment also would mean that lots with highway frontage could not get access from the new highway segment. Map 3.1-4 provides an overview of the location of these impacts. Additional details can be found in the *Conceptual Stage Relocation Study* (Appendix B of this SEIS) and the *Preliminary Engineering Report* (HDR 2014a). The use of these lands may require re-platting and would reduce lot sizes and the number of lots available. The lots would be adjacent to the main highway instead of rural lots near the end of Slaughter Ridge Road (access still would be from Slaughter Ridge Road). Because DOT&PF would reserve access rights along the segment built on a new alignment, the alternative would not induce community growth and land use changes in the project area because access to previously inaccessible land would not be provided.

**Private and Native Corporation Lands.** All build alternatives would impact four vacant private parcels located at the eastern end of the alignment, on the north side of Kenai Lake, and right-of-way requirements would affect only a small portion of each of the individual parcels. Less than 1 acre of private land would be acquired. On CIRI Tract A, the Juneau Creek Variant Alternative would acquire approximately 12 acres of the 42-acre parcel as well as bisect it into two 15-acre parcels. DOT&PF’s reservation of access rights for alternative segments built on new alignment (DOT&PF would not allow driveway or road connections) means that the parcels would not have direct access to and from the new highway.

### **Construction Impacts**

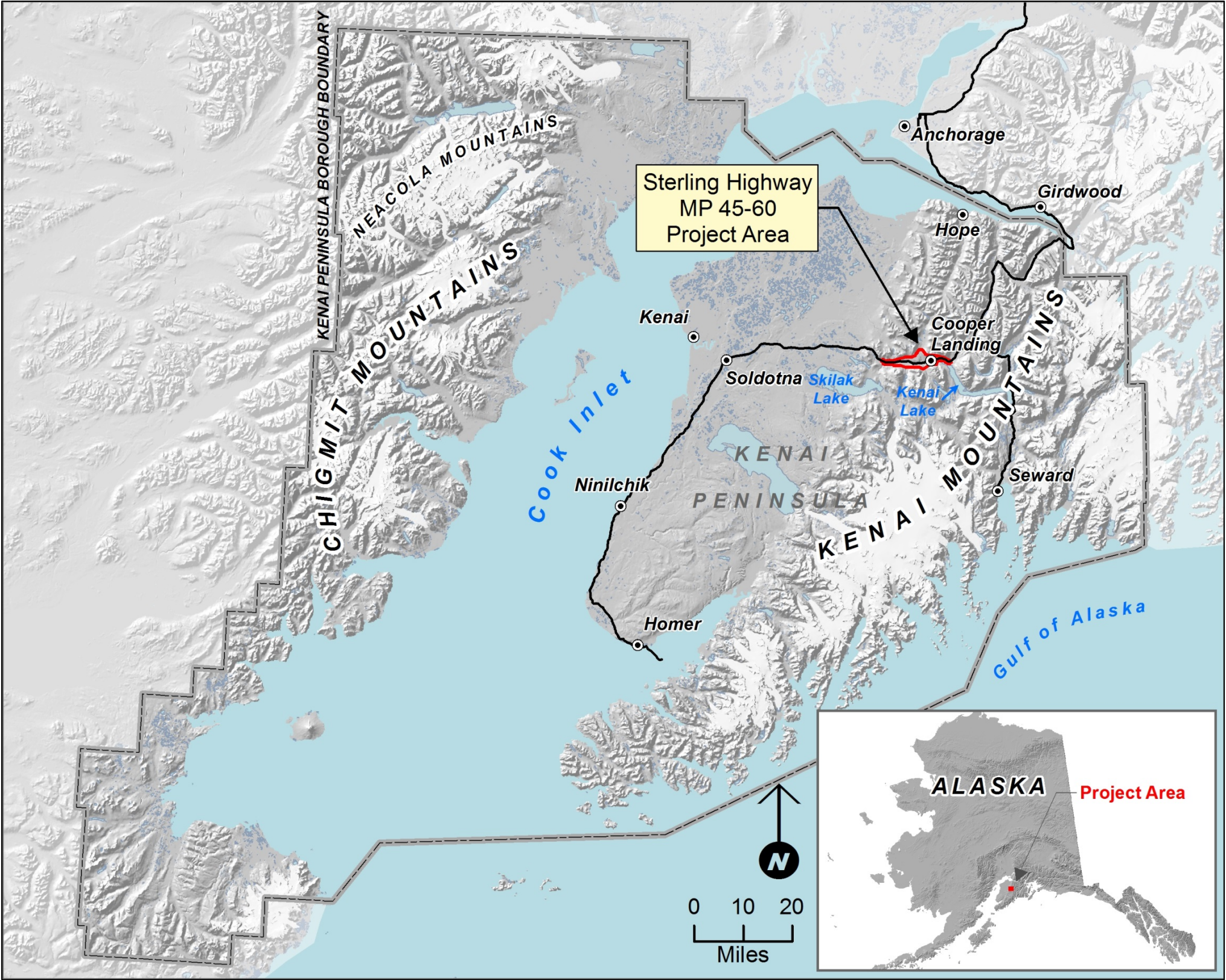
Estimated impacts are presented in Table 3.1-4, above. A material disposal site on State land about 2 miles west of Juneau Creek and another located east of Juneau Creek would change the surface appearance of the land but not land ownership, and there would be no substantial change in land use in these mostly undeveloped areas. A staging area within several hundred feet west of Juneau Creek is proposed to be moved into the Juneau Falls Recreation Area and combined with development of a new trailhead there to avoid clearing, development, and wetland impact in two locations—see the mitigation discussion in Section 4.6.8.

Other minor land impacts are likely to occur in limited locations during construction where construction may need to occur outside the new highway right-of-way, usually immediately adjacent to the right-of-way.

For all such areas, DOT&PF or the construction contractor typically would negotiate a temporary construction easement or permit from the land owner.

**Mitigation**

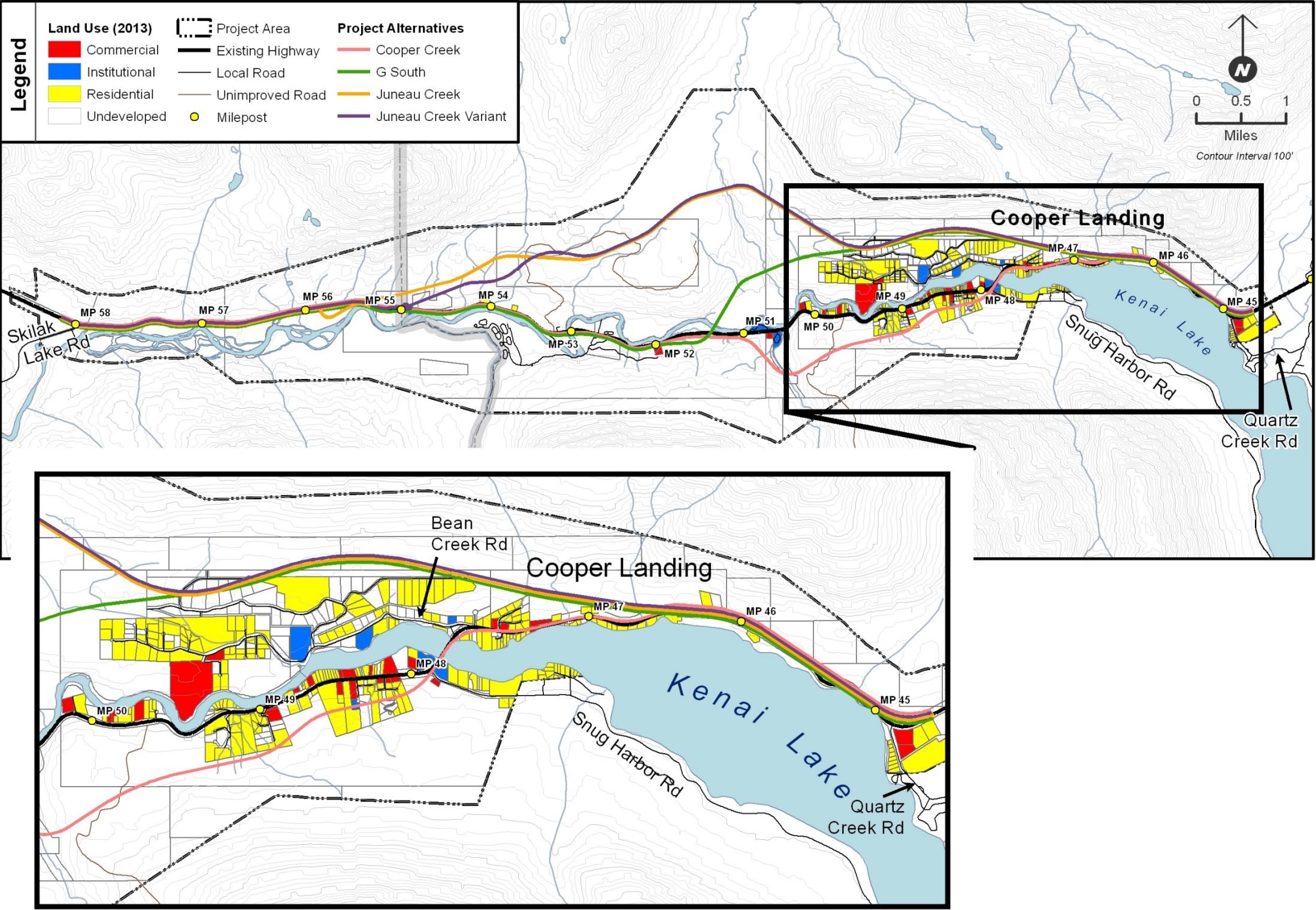
Private and Borough land owners would be compensated at fair market value for land acquired by the project in accordance with the Uniform Relocation and Real Property Acquisition Policies Act of 1970, as amended. Connection under or over the new highway would be provided for existing USFS West Juneau Road public easements that pass through State Unit 395 to maintain access to Unit 395 and beyond to USFS lands.



Map 3.1-1. Kenai Peninsula Borough and the project area

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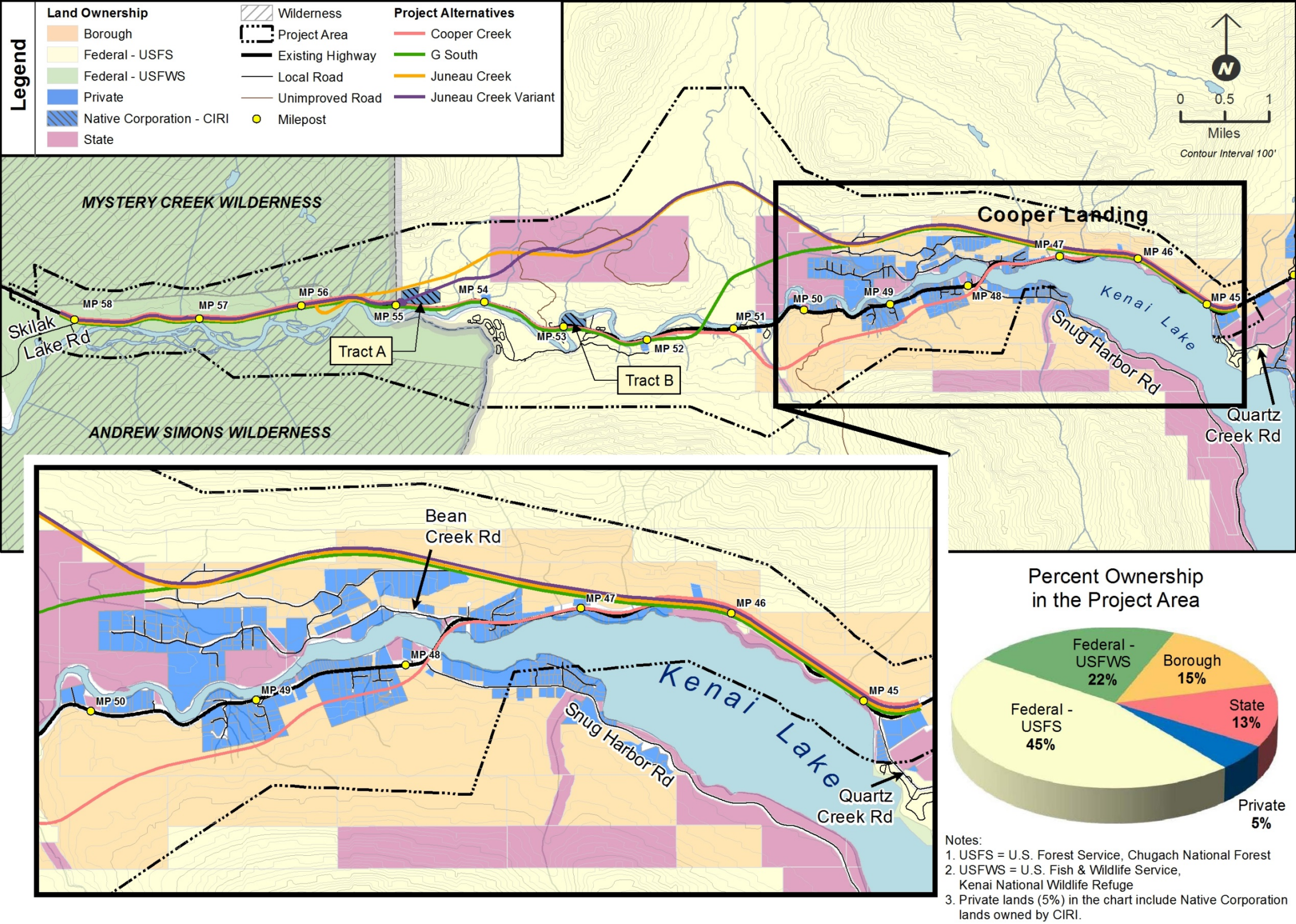




Map 3.1-2. Land use in the project area

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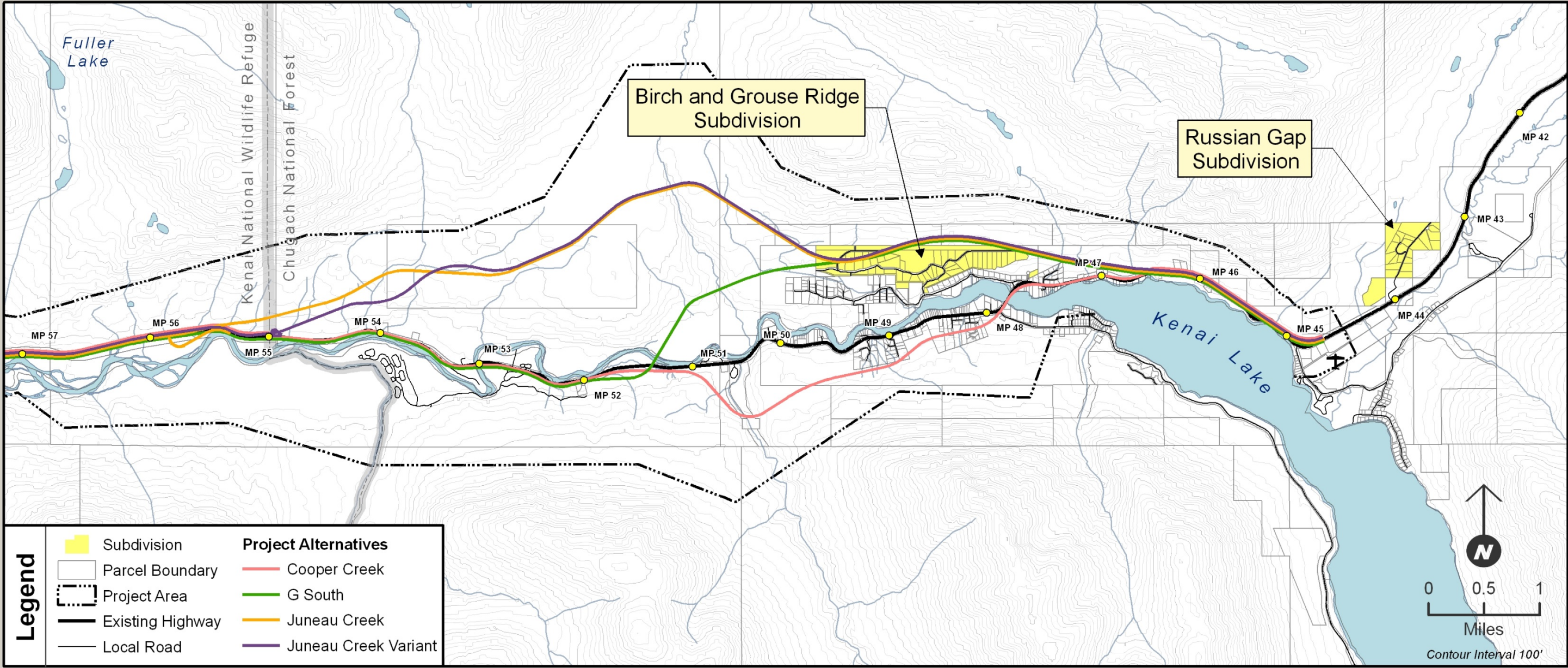


Map 3.1-3. Land ownership in the project area



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## **3.2 Land Use Plans and Policies**

### **3.2.1 Affected Environment**

Federal, State, and Kenai Peninsula Borough (Borough) governments exercise planning authority within the project area. Multiple Federal, State, and local plans acknowledge the likelihood of this project. Some of the plans appear to await the outcome of this highway project before making firm plans for lands in the project area. This Supplemental Environmental Impact Statement (SEIS) examines these plans to disclose whether the project is generally consistent with planning direction or not. The following plans guide land use decisions within the project area:

#### **Federal Plans**

- *Revised Land and Resource Management Plan: Chugach National Forest* (USFS 2002a)
- *Comprehensive Conservation Plan: Kenai National Wildlife Refuge* (USFWS 2010a)

#### **State Plans**

- *Kenai Area Plan for State Lands* (DNR 2001)
- *Kenai River Comprehensive Management Plan* (DNR et al. 1997)

#### **Borough Plans**

- *Cooper Landing Land Use Classification Plan* (CLAPC 1996)
- *Kenai Peninsula Borough Comprehensive Plan* (KPB 2005b)
- *Kenai Peninsula Borough Coastal Management Program* (KPB 1990)
- *Cooper Landing, Alaska, Walkable Community Project: Alternative transportation planning to address congestion and road impacts near the Russian and Kenai Rivers* (LDN 2010a).

#### **Other Pertinent Plans**

- *North and South Sterling Byways Corridor Partnership Plan* (Jensen Yorba Lott, Inc. 2008)
- *Kenai Mountains-Turnagain Arm National Heritage Area Management Plan* (KMTA 2012)

#### **3.2.1.1 Federal Plans and Management Direction—U.S. Fish and Wildlife Service Kenai National Wildlife Refuge**

General management policies for the Kenai National Wildlife Refuge (KNWR) are contained in the *Kenai National Wildlife Refuge Comprehensive Conservation Plan* (USFWS 2010a) and supplemented by more specific local management plans. The KNWR is managed to conserve habitat for moose, bears, mountain goats, Dall sheep, wolves, salmon, waterfowl, and other animal species. It also is managed to fulfill treaty obligations and ensure water quality and quantity.

The conservation plan classifies the entire Sterling Highway road corridor that traverses the KNWR within the project area (west of Milepost [MP] 55) as an “intensive management” area. Within the project area, the areas both north and south of the road corridor are designated for Wilderness management. Intensive management lands are areas of high public use where natural processes are modified and the influence of activities by people is evident. The intensive management land areas allow for road construction. Wilderness lands have been designated by Congress under the Wilderness Act. The U.S. Fish and Wildlife Service (USFWS) manages these areas to preserve the pristine and unmodified character of these areas. Wilderness is a protective management category, and constructing roads in designated Wilderness within the KNWR requires approval by the President of the United States and a joint resolution of both houses of Congress in a process described in the Alaska National Interest Lands Conservation Act (ANILCA) Title XI (see Section 3.2.1.4). The Mystery Creek Wilderness is located north of the highway and north of power transmission line easements. The Andrew Simons Wilderness is located south of the highway corridor, south of the Kenai River (see Map 3.2-1).

### **Wilderness Management**

Based on their role as a Cooperating Agency, the USFWS provided the following information regarding Wilderness management on the refuge:

The Wilderness Act of 1964 (Pub. L. 88-577) provides the following purposes for the Kenai Wilderness Area (in the project area, this includes the Mystery Creek and Andrew Simons Wilderness units):

- (i) To secure an enduring resource of wilderness;
- (ii) To protect and preserve the wilderness character of areas within the National Wilderness Preservation System; and
- (iii) To administer [the areas] for the use and enjoyment of the American people in a way that will leave them unimpaired for future use and enjoyment as wilderness.

The history and intent behind the Wilderness Act make Wilderness more than just another category of management. Wilderness encourages having a broadened perspective of the Refuge landscape, one that extends beyond managing it solely as wildlife habitat. Wilderness is managed as an area “retaining its primeval character and influence.” The definition of Wilderness found in Section 2(c) of the Wilderness Act identifies the four fundamental qualities of Wilderness character as “untrammeled,” “undeveloped,” “natural,” and with “outstanding opportunities for solitude or a primitive and unconfined type of recreation.”

Wilderness provides human visitors with such opportunities, which may be characterized in terms of experiential dimensions such as discovery, self-reliance, and challenge. Research has shown that some values of Wilderness extend beyond Wilderness area boundaries to people who may never visit but who benefit from the protection of natural ecological processes—benefits such as clean air and water and the simple knowledge that such places exist. Wilderness areas are managed to preserve their experiential, aesthetic, scientific, and other related values.

The Wilderness Act requires that the KNWR maintain the wilderness character of designated Wilderness areas. Public comments received during scoping for the June 2010 revision to the KNWR’s Comprehensive Conservation Plan (CCP) indicated that people value the KNWR’s wilderness character, its accessibility, and the role it plays in conserving fish, wildlife, and their



habitats. Natural sounds are an essential component of functional habitats. Additionally, they may influence the human experiential opportunities of some users in Wilderness.

Both Wilderness units within the project area offer areas of solitude for those willing to traverse the sometimes rugged country. The Mystery Creek Wilderness Unit, for example, provides excellent opportunities for hiking, camping, hunting, fishing, and wildlife viewing. Solitude in the wilderness context is generally understood to mean freedom from sights, sounds, and other evidence of modern man. While the relative amount of freedom from these things necessary to experience solitude is highly personal and variable, the Wilderness Act states only that outstanding opportunities for solitude be provided.

Accordingly, encountering other people, hearing mechanized sounds (e.g., from aircraft overflights), or seeing the lights of a distant population center are all examples of things that may negatively affect solitude opportunities, while remoteness, low visitor density, and vegetative or topographic screening are things that may enhance solitude opportunities.

The 1985 Kenai Refuge CCP established management programs to protect those areas of the Refuge designated as Wilderness. Conserving the pristine and unmodified character of these wild areas was a central purpose of the ANILCA legislation and the establishment of Kenai National Wildlife Refuge. Backcountry hiking and camping, rafting, canoeing, and a host of other primitive recreation opportunities are plentiful in the varied portions of Kenai Wilderness. Trail and off-trail access opportunities are abundant.

Wilderness supports a wide range of habitats, including estuarine, alpine, shrub-lichen, lowland subalpine shrub, mature forest, lakes, and streams. These habitats, in turn, support a variety of wildlife, including wilderness-dependent species such as wolves, caribou, trumpeter swans, brown bear, Dall sheep, mountain goat, marten, wolverine, and lynx.

### **3.2.1.2 Federal Plans and Management Direction—Chugach National Forest**

Management of Chugach National Forest (CNF) lands is directed by the *Revised Land and Resource Management Plan: Chugach National Forest* (Forest Plan; (USFS 2002a)). The plan designates land in the project area into several management areas, each with a “prescription” for management. These management prescriptions are listed below with their identified goals and are shown on Map 3.2-2:

- Backcountry Management Areas are managed to emphasize a variety of recreational opportunities for backcountry activities in natural-appearing landscapes with opportunities for solitude, isolation, and quiet when travelling cross-country. In the project area, this prescription applies only to the Juneau Creek drainage, including lands west of the Juneau Creek canyon and otherwise generally from the Juneau Falls area northward.
- Fish and Wildlife Conservation Area Management Areas are managed to emphasize the conservation of specific fish and wildlife habitats. Landscapes are mostly natural-appearing. Vegetation may be modified for the benefit of wildlife. Recreation provides opportunities for solitude, isolation, and quiet when traveling cross-country. In the project area, this prescription applies to the upper Juneau Bench area (rolling and flat lands above the Kenai River and west of Juneau Creek) and lower slopes of the mountains north of the Kenai River and Kenai Lake.

- Fish, Wildlife and Recreation Management Areas are managed to provide a variety of habitats for fish and wildlife species and year-round recreational opportunities in developed and dispersed settings. Opportunities for isolation, solitude, and quiet may be limited. In the project area, this prescription applies to lands north and south of the Kenai River and continues over the mountains to the south and southeast.
- Recreational Rivers Management Areas are managed to maintain, enhance, and protect the free-flowing character and scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values for the benefit and enjoyment of present and future generations. In the project area, this prescription applies to the lower Russian River downstream to the Russian River Campground.
- Major Transportation/Utility Corridor Management Areas are managed for existing and future transportation systems/utility systems (defined as State and Federal highways, etc.). This prescription was developed to specify management direction for existing and reasonably foreseeable future major transportation and utility routes. In the project area, this prescription applies to the existing Sterling Highway and to electric transmission lines that parallel the highway on the hillside to the south.

Each of these management prescriptions is accompanied in the Forest Plan by descriptions and charts regarding allowed uses, uses conditionally allowed, and uses not allowed. The plan outlines scenic objectives (see Section 3.16 of this SEIS). The plan also outlines recreational objectives in terms of a Recreational Opportunity Spectrum, a range of recreational environments from primitive to urban.

Routes on CNF classified as roads (rather than trails) are defined as routes wholly or partially within or adjacent to National Forest System lands that are determined to be needed for motor vehicle access, such as State roads, county roads, privately owned roads, National Forest System roads, and roads authorized by the U.S. Forest Service (USFS) that are intended for long-term use. Roads are shown on Map 3.6-1 in the Transportation section.

Inventoried Roadless Areas (IRAs) were classified as part of a nationwide process to identify USFS lands that may qualify for Wilderness designation in the future. See Section 3.2.1.3.

The Fish and Wildlife Conservation management areas north of the Kenai River have been modified, as allowed in the management plan, to remove beetle-killed spruce for fire protection around the Cooper Landing community and to enhance moose habitat. These efforts have involved construction of logging roads, some of which remain in use as trails used by skiers, snowmobilers, hikers, and others, and by motorized vehicle for USFS management activity. In 2013, further vegetation management and trail enhancement efforts were observed in the Bean Creek area.

The USFS also has withdrawn several areas from mineral entry and from various forms of land disposal (transfer of ownership) and has set them aside as recreation areas. These include the Cooper Creek Campground, Russian River Campground, Russian Lakes Recreation Area, Kenai River Recreation Area, Juneau Falls Recreation Area, and (just outside the project area) Quartz Creek Campground—all depicted on Map 3.8-1 in the Recreation section. Some of the recreation withdrawals are perpetual and some expire every 20 years unless renewed. The USFS has renewed recreation withdrawals when necessary. Additional information on the recreation withdrawals appears in Section 3.8, Park and Recreation Resources, and Section 4(f).

### **3.2.1.3 Federal Management—USFS Roadless Areas**

The Roadless Area Conservation Rule (36 CFR § 294) applies to the National Forest System. Roadless areas were inventoried by the USFS nationwide beginning in the 1970s. Inventories and evaluations examine such areas for multiple special characteristics and values and in part examine the suitability of such areas for possible future designation as part of the National Wilderness Preservation System (Federal Wilderness). The Chief of the Forest Service has reserved authority to review and approve proposals for new roads in inventoried roadless areas (IRAs).

The project area includes two classified IRAs: 1,125 acres of the Kenai Lake IRA (total IRA is approximately 213,200 acres), located south of the Kenai River and south of the existing Sterling Highway, and 3,040 acres of the Resurrection IRA (total IRA is approximately 224,600 acres), located north of the existing highway (Map 3.2-3 and USFS (2006a)).

The Roadless Rule defines “Roadless Area Characteristics” as:

Resources or features that are often present in and characterize inventoried roadless areas, including:

1. High quality or undisturbed soil, water, and air;
2. Sources of public drinking water;
3. Diversity of plant and animal communities;
4. Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land;
5. Primitive, semi-primitive non-motorized, and semi-primitive motorized classes of dispersed recreation;
6. Reference landscapes;
7. Natural appearing landscapes with high scenic quality;
8. Traditional cultural properties and sacred sites; and
9. Other locally identified unique characteristics.

[36 CFR § 294.11]

The Roadless Rule provides a general prohibition on construction of new roads within IRAs, but also provides a potential exception for projects like the Sterling Highway Project. The prohibition on road building is excepted if:

The Secretary of Agriculture determines that a Federal Aid Highway project, authorized pursuant to Title 23 of the United States Code, is in the public interest or is consistent with the purposes for which the land was reserved or acquired and no other reasonable and prudent alternative exists... [36 CFR § 294.12(b)(6)]

The following text addresses the roadless area characteristics indicated above for the Resurrection IRA, which overlaps the north side of the project area, and the Kenai Lake IRA, which overlaps the south side of the project area (see Map 3.2-3). Both IRAs extend well outside the project area. The USFS provides information on the IRAs in Appendix C of the *Chugach National Forest Land Management Plan Revision Final EIS* (USFS 2002a). Neither the

Resurrection IRA nor the Kenai Lake IRA was recommended for Wilderness status in the *Revised Forest Plan* (USFS 2002a).

- **High-quality or undisturbed soil, water, and air.** The overlap between the project area and the IRAs (the northern edge of the Kenai Lake IRA and southern edge of the Resurrection IRA) contains high-quality and largely undisturbed soil, water, and air quality. The northern Kenai Lake IRA has been affected by the Cooper Lake hydroelectric project, with reduced water flow in Cooper Creek so that the creek no longer supports any substantial run of salmon and therefore is less important as brown bear habitat than other similar streams nearby. A project is underway over several years to enhance the water flow and restore salmon habitat. Sections 3.12, 3.13, and 3.14 address soils, water, and air quality, respectively. No hazardous wastes are known to occur in the IRAs. Hazardous waste sites are addressed in Section 3.17.
- **Sources of public drinking water.** Area streams and lakes within the IRAs or downstream of the IRAs are not a substantial source of public drinking water. Outside the project area, lakes and streams within the IRAs provide drinking water for recreational trail and cabin users. Most residences and commercial and public structures in the Cooper Landing area have individual wells, and groundwater moving down-gradient from the IRAs supplies drinking water to individual homes and to public facilities. See Section 3.13, Water Bodies and Water Quality, for a discussion of wellhead protection areas at Section 3.13.1.4 and see Map 3.13-2.
- **Diversity of plant and animal communities.** Diverse plant and animal communities exist within the IRAs, but the diversity is not considered unusual for the Kenai Peninsula and Kenai Mountains. Wetlands and vegetation communities are addressed in Section 3.20. Fish and wildlife are addressed in Sections 3.21 and 3.22, respectively.
- **Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land.** There are no Federal or State candidates; proposed, threatened, or endangered species; or designated Critical Habitat for such species in the project area. Sensitive plant species known or suspected to be present in the Resurrection and Kenai Lake IRAs of the CNF are identified in Section 3.20.1.3 of this Draft SEIS. The Kenai brown bear and the wolverine are State of Alaska “species of greatest conservation need.” On the CNF, the brown bear is a management indicator species, and the wolverine is a species of special interest. While wildlife agencies monitor these species, they have not taken steps to formally list or manage these species under the Threatened and Endangered Species Act. Brown bears and wolverines are dependent on large undisturbed areas of land. Other species that depend on large land areas that agencies have noted as important indicator species in or near the project area include bald eagle, moose, wolf, lynx, wolverine, river otter, black bear, mountain goat, and Dall sheep. Section 3.22 addresses wildlife as well as threatened and endangered species.
- **Primitive, semi-primitive nonmotorized and semi-primitive motorized classes of dispersed recreation.** The Resurrection IRA encompasses much of the Resurrection Pass National Recreation Trail, which offers summertime semi-primitive nonmotorized recreation. In winter, the USFS management scheme for this area allows for semi-primitive motorized use by snowmobile alternating every other year with semi-primitive



nonmotorized opportunities. The Kenai Lake IRA is a large area that offers mostly primitive and semi-primitive nonmotorized recreation opportunities. The portions that cover the project area are mostly mountain slopes but include small portions of the Russian Lakes Trail, Stetson Creek Trail, and Cooper Lake Dam Road (used for nonmotorized recreation). Section 3.8 addresses recreation within the project area in general. Chapter 4 discusses the Resurrection Pass Trail and other recreation sites in greater detail.

- **Reference landscapes.** One definition of reference landscapes is that they are “carefully preserved natural or near-natural forests that can provide information about natural species’ mix and ecology, that can be used in planning and measuring the success of restoration” (Dudley 2005). IRAs are areas that provide reference landscapes as compared to other areas of the National Forest that are not within IRAs. Forested portions of the two IRAs could serve as reference landscapes because they are mostly natural forests with largely intact natural species mix and ecology, although tree harvest and habitat manipulation for the benefit of moose has occurred on the bench areas on both sides of Juneau Creek, in conjunction with spruce bark beetle infestation within the past few decades. This has altered the landscape in the southern portion of the Resurrection IRA where it overlaps the project area. There is no indication that the affected portions of these IRAs are being used as reference landscapes today or that there is a need for them as reference landscapes in the foreseeable future. Section 3.20 generally addresses vegetation.
- **Natural appearing landscapes with high scenic quality.** The appearance of the landscapes within these IRAs overall is natural appearing with high scenic quality. In the Roadless Areas appendix to the Forest Plan Environmental Impact Statement (EIS), the USFS indicates 97 percent of each of these IRAs as having “very high” scenic integrity, where the natural environment is intact and only natural processes are visible. Areas near the edges and overlapping with the project area have been affected by previous human activity, including logging and habitat enhancement along the southern edge of the Resurrection IRA, and trail work at the Bean Creek Trail and Resurrection Pass Trail (Resurrection IRA) and Stetson Creek Trail (Kenai Lake IRA). Section 3.16 addresses the visual aesthetics and the visual character of the project area and summarizes the visual resources technical report prepared for the project (HDR and USKH 2012).
- **Traditional cultural properties and sacred sites.** The Squalantnu Archaeological District overlaps the southern portion of the Resurrection IRA and the northern portion of the Kenai Lake IRA in the project area. The northwestern portion of the Squalantnu Russian River Confluence Traditional Cultural Property (TCP) overlaps the southern edge of the Resurrection IRA. Individual archaeological sites that are illustrative of the Confluence TCP’s cultural significance include a site with human burials, a ceremonial and winter village site, and sites used for interpretive and cultural activities; all of these sites are located outside the IRAs. Section 3.9 generally addresses historic, archaeological, and cultural resources.
- **Other locally identified unique characteristics.** Other characteristics beyond those identified above have not been noted.

#### **3.2.1.4 Federal Management—ANILCA Title XI**

ANILCA created or expanded many units in Alaska of the National Park System, National Wildlife Refuge System, National Wilderness Preservation System, and National Trails System—Federal lands referred to as conservation system units (CSUs). Among these CSUs are the KNWR and the Resurrection Pass National Recreation Trail in the project area. These lands are addressed elsewhere in this document, in Land Ownership (Section 3.1) and Recreation (Section 3.8) in particular. This section is separate because the USFWS, as manager of the KNWR, and the USFS, as manager of the Resurrection Pass Trail, along with the Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), have responsibilities under ANILCA if the project would impact the CSUs. This Draft SEIS is meant to provide the basic information required by each agency to make a decision to approve or disapprove a transportation corridor across the CSUs.

Title XI of ANILCA addresses “Transportation and Utility Systems In and Across, and Access Into, Conservation System Units.” In general, ANILCA supersedes other laws and regulations by creating an opportunity to consider transportation corridors across CSUs where they otherwise might be restricted or not allowed at all. ANILCA Title XI includes several procedural requirements that apply to the approval or disapproval of the authorization of any transportation or utility system by any Federal agency. The Alaska Department of Transportation and Public Facilities (DOT&PF) must simultaneously submit Standard Form 299 to the Federal agencies with jurisdiction over resources within the CSUs and to FHWA, as a funding agency for the proposal to create a transportation system on a CSU (the “federal agencies concerned”). The submittal starts a time period in which a Draft and Final EIS must be completed, typically 9 months from the date of filing for the Draft EIS and 1 year from the date of filing for the Final EIS. The final authorization process is different for CSUs designated as Federal Wilderness and for CSUs that are not designated Wilderness.

The USFS considers the Resurrection Pass Trail to be a CSU within CNF. For Section 4(f) purposes, the USFS defined the recreation area associated with the trail to include the trail and a buffer of 500 feet on each side of the trail centerline, for a total width of 1,000 feet (see Section 4.2.4 for details on the trail). For this document, it is assumed the CSU encompasses this same trail buffer area. The Resurrection Pass Trail is managed by the USFS, and a decision on effects to the trail would follow a non-Wilderness decision-making process identified in Title XI of ANILCA.

The KNWR encompasses a large proportion of all lands on the Kenai Peninsula. The Sterling Highway west of the CNF boundary at existing MP 55 lies within an easement across the KNWR. North of the highway is the Mystery Creek Wilderness, an area of designated Federal Wilderness managed by the USFWS. A decision on effects to the KNWR and its Wilderness area would follow a Wilderness decision-making process identified in Title XI of ANILCA.

For the Resurrection Pass Trail, the Title XI authorization process under Section 1106(a) would require “each Federal agency concerned” to make a decision to approve or disapprove the project with “detailed findings supported by substantial evidence” regarding the need for the project, options, etc., as detailed in Section 3.2.5.2. The decision must be made within 4 months of the publication of the Final EIS. If the decision by any one of the Federal agencies is to not approve the transportation system, DOT&PF may appeal to the President of the United States, who has

4 months to approve or deny the application and publish findings in the *Federal Register*. If the President disapproves the project, the applicant may challenge the decision through the courts.

For the KNWR Wilderness, the Title XI authorization process under Section 1106(b) would require “each Federal agency concerned” to undertake the same “detailed findings supported by substantial evidence” and then “promptly” submit to the President of the United States a tentative approval or disapproval of the project and reasons for this tentative decision. The President, within 4 months, would make a decision to approve or disapprove the project. A decision to approve would be forwarded to Congress, and ANILCA requires a joint resolution of both houses of Congress to approve the transportation system before the agencies would issue their authorizations for the new highway. No Title XI application for crossing Wilderness has ever been advanced to the President and Congress; the law allows for approximately 8 months from the time the President receives tentative approvals from the agencies until Congress must pass its joint resolution for final approval. If the President or either house of Congress fails to approve the application, the application is denied.

The USACE has jurisdiction over waters of the U.S., including wetlands, that occur within the CSUs and therefore is involved in the ANILCA process. Likewise, FHWA, as the funding agency for this project, is responsible for the transportation elements of the project and is subject to the ANILCA process. Therefore, both USACE and FHWA, in addition to the land management agencies (either USFS or USFWS) must make decisions about the Resurrection Pass Trail that are appealable to the President and must make tentative decisions about use of KNWR Wilderness and forward them to the President for a final decision.

Land exchange provisions of the Russian River Land Act could alter the KNWR and its Federal Wilderness lands in the project area and therefore could influence the ANILCA Title XI process described above for the Juneau Creek Alternative. Specifically, if the land in question was removed from refuge status before this National Environmental Policy Act process was completed, the Title XI process would end for KNWR (but not for Resurrection Pass Trail). See Sections 2.4.2.2 and 3.1.1.5 regarding Cook Inlet Region, Incorporated (CIRI), lands and the Russian River Land Act.

### **3.2.1.5 State Plans**

The *Kenai Area Plan* (DNR 2001) and *Kenai River Comprehensive Management Plan* (DNR et al. 1997) are plans guiding use of State lands in the project area. The *Kenai Area Plan* establishes future uses and management direction for State-selected lands and State-owned lands, including proposed additions to the Kenai River Special Management Area (KRSMA) and other units of the State park system. “State-selected” refers to Federally owned land that has been selected by the State but for which State ownership is not finalized. Some selected lands may never end up being conveyed to the State, and would be relinquished depending on finalization of other selections. For this reason, the State over-selects Federal lands. The *Kenai Area Plan* indicates that the alternative selection for this project may affect the intent of some management units. The two management units that are listed in the *Kenai Area Plan* as partially dependent on the proposed Sterling Highway MP 45–60 Project are Units 394B and 395. These are illustrated in Map 3.2-4 at the end of this chapter. In reference to these two units, the intent of the *Kenai Area Plan* was “to make the unit with the most traffic conveyable to the Borough” for community development and to retain the other unit in State ownership for brown bear habitat and brown bear movement (DNR 2001). In other words, the plan indicated that the State would

pass one of the two parcels to the Borough for settlement, and the Sterling Highway Project could influence which one.

These descriptions in the plan were superseded in 2014 by an Alaska Department of Natural Resources (DNR) decision to convey Unit 395 to the Borough. The State is no longer pursuing Unit 394b, and it remains in USFS ownership. The details of the decision to convey Unit 395 still are contingent on the outcome of this project. Because some alternatives would affect the parcel and some would not, DNR determined the State would delay transfer of management control of the land until it had determined which lands, if any, might need to be reserved in State ownership for the highway (DNR 2014).

Unit 395, at 1,087 acres, is located on a topographic bench above and west of Juneau Creek and is currently accessible via unpaved former logging roads (shown on Map 3.2-4). These are closed to public vehicle use, with a gated entry, except for snowmobiles in winter. The roads were reserved as Federal public easements when the land transferred to the State.

The *Kenai Area Plan* lists several provisions in order for conveyance to the Borough and settlement to occur. These provisions include the following: the State must retain a 100-foot scenic buffer, provide access to the Resurrection Pass Trail, and provide “limited access” from any new highway to prevent strip development and proliferation of driveways along the new route.

The *Cooper Landing Land Use Classification Plan*, which was adopted by the Borough in 2005, provides recommendations for Unit 395. Refer to Section 3.2.1.6 for additional detail.

The *Kenai River Comprehensive Management Plan* (DNR et al. 1997) addresses management of the Kenai River and adjacent State uplands (KRSMA—the Kenai River from bank to bank, and proposed KRSMA additions in the project area). Multiple land managers work toward similar aims for the river, and the Alaska Department of Environmental Conservation (ADEC), the Alaska Department of Fish and Game (ADF&G), CNF, and USFWS signed a Memorandum of Understanding (MOU) agreeing to implement the recommendations of the plan. According to the *Kenai River Comprehensive Management Plan*, the purpose of the KRSMA is “to protect and perpetuate the fishery and wildlife resources and habitat in the (management) unit and adjacent area and to manage recreational uses and development activities in the unit and adjacent area” (DNR et al. 1997). The boundaries of proposed additions to KRSMA are shown on Map 3.2-5.

The *Kenai River Comprehensive Management Plan* sets forth recommendations for a variety of current and projected land uses, including public facility projects. The land use objectives generally applicable to the Sterling Highway MP 45–60 Project are presented below:

- Ensure development within the area of the Kenai River watershed is undertaken in a managed and coordinated fashion to ensure the continued integrity of the watershed.
- Focus on potential impacts of heavy recreational use or rural/urban development on the areas of the Kenai River watershed.
- Ensure natural areas within the Kenai River watershed, if developed, are designed so that neither the fishery nor the habitats related to the fishery are adversely affected.
- Manage timber harvest, mining, oil and gas, and other development within the Kenai River watershed to avoid significant adverse impacts to the resources of the KRSMA, including, but not limited to, water, soils, fisheries, wildlife, visual quality, and recreation.

- Ensure development does not impair the functioning of wetlands important to the maintenance of habitat and hydrologic functions.
- Identify and protect public areas of cultural and historic significance.

Under the heading of “Habitat,” the plan addresses new roads and specifically addresses this project. The habitat recommendation, adopted by all managers along the river corridor through the MOU, is “Public agency managers shall site and design new facilities to avoid or minimize habitat impacts, both from construction impacts and subsequent public use.” Associated policies and standards include:

Public road construction projects in upland areas should be located away from the Kenai River and should employ standard best management practices (BMPs) to preclude siltation to the river and its adjacent wetlands and tributaries, both during and subsequent to construction... The only recognized additional bridge crossing of the Kenai River in the Management Plan is the proposed Funny River Bridge [in Soldotna].  
-*Kenai River Comprehensive Management Plan*

The Sterling Highway MP 45–60 Project is called a “bypass,” and the plan indicates that “if the bypass route is selected, the current road should be made more enjoyable and safer” by implementing upgrades to public river access facilities along the bypassed portion of existing roadway.

Consistent with the *Kenai River Comprehensive Management Plan*, the *Kenai Area Plan* indicates that State-owned and -selected land along Kenai River, Kenai Lake, Cooper Lake, and the tributaries of the Kenai River and Quartz Creek are proposed additions to the KRSMA. Depending on the unit, these areas are to be managed for public recreation and tourism or for fish and wildlife habitat or both. The units within the project area that are proposed to be added to KRSMA are 391A-E, 391G-N, 391Q, 392A-G, 393, 394A, 394C-D, and 397 (see Map 3.2-4 and DNR (2001)).

These State lands have been administratively transferred to the DNR Division of Parks and Outdoor Recreation (DPOR) for inclusion in the KRSMA under Interagency Land Management Agreements (ADL 225157 and ADL 228706). A Special Use Designation (SUD), ADL 226527, has been applied to lands that have been administratively transferred to DPOR. The SUD provides the purpose and management intent for how these areas are to be managed. The SUD is intended to protect the fish and habitat resources of the Kenai River and implements certain State land and water recommendations of the *Kenai River Comprehensive Management Plan*. DNR-DPOR and DNR-Department of Mining, Land and Water co-manage some uses of the administratively designated KRSMA lands.

Beyond the specific land use plans, the State of Alaska’s land management concerns extend to certain historic routes that fall under Revised Statute 2477, commonly referred to as RS 2477. The state asserts that RS 2477 public access easements exist in the project area for the historic Resurrection Pass Trail/Bean Creek Trail lying east of Juneau Creek and for the historic Stetson Creek Trail lying west of Cooper Creek. These trails are mapped in Section 3.8 (Map 3.8-1) and in greater detail in Chapter 4, Map 4-6, Map 4-7, and Map 4-8. DNR has assigned numbers to these RS 2477 routes: Bean Creek Trail is RST 579, and Stetson Creek Trail is RST 619. DNR considers these to be pre-existing easements that are valid public access routes that should be preserved. The U.S. Bureau of Land Management has recognized only a few RS 2477 easements

in Alaska. These would be considered public rights-of-way on State, KPB, and private lands by the State but may not be recognized as such on Federal lands by the Federal government.

### **3.2.1.6 Kenai Peninsula Borough Plans**

***Kenai Peninsula Borough Comprehensive Plan*** (KPB 2005b). The *Kenai Peninsula Borough Comprehensive Plan* was adopted by ordinance in 2005. This plan outlines the following goals and objectives:

- Obtain clear title to manage or dispose of Borough-owned land, timber, and gravel resources for the benefit of Borough residents.
- Support efforts to foster responsible agricultural growth and diversity in the Borough.
- Ensure the interests of the Borough and its residents are adequately considered in management decisions regarding State and Federal land within the Borough.
- Increase the public's access to information about the characteristics of the land and the location of existing land uses.
- Maintain the freedom of property owners in rural areas of the Borough by allowing them to make decisions and control use of private land consistent with other goals and objectives of the *Kenai Peninsula Borough Comprehensive Plan*.
- Reduce conflicts arising from incompatible land uses outside of incorporated cities.
- Assess and help identify wetlands, floodplains, erosion-prone areas, and landslide or avalanche zones.

The Borough is entitled to select 156,000 acres of State land; to date, a total of 125,500 acres of the entitled selection have been patented or approved for patent by the State. The Borough is entitled to receive the remaining 30,500 acres from the State and has selected sufficient acreage to do so. Some selected lands may never be conveyed to the Borough and would be relinquished depending on finalization of other selections. For this reason, the Borough has over-selected State lands.

Chapter 5 of the *Kenai Peninsula Borough Comprehensive Plan* addresses transportation by setting goals for the future and recommending action items in the 10-year horizon (2013, given that this chapter was published in 2003). Traffic modeling documented in the chapter confirms that traffic on the Sterling Highway peaks during the summer. The plan does not identify any improvements to the Sterling Highway in the project area. The plan identifies a roadside trail along the Sterling Highway extending the length of the community as a high-priority trail improvement.

The community of Cooper Landing does not have planning authority. Therefore, relevant plans guiding development on private land are adopted by the Borough. The Borough Assembly adopted the *Cooper Landing Land Use Classification Plan* (described below (CLAPC 1996)) as part of the comprehensive plan. Similarly, in 2010, the Assembly incorporated the *Cooper Landing, Alaska, Walkable Community Project* (LDN 2010a) into the *Kenai Peninsula Borough Comprehensive Plan* (Ordinance 2010-13); see below for details.

***Cooper Landing Land Use Classification Plan for Borough-owned and Borough-selected Lands*** (CLAPC 1996). The unincorporated community of Cooper Landing voted to approve the

*Cooper Landing Land Use Plan* in 1993 and the *Cooper Landing Land Use Classification Plan* in September 1996 (CLAPC 1996). The *Cooper Landing Land Use Classification Plan* provides planning recommendations for selection, classification, and use of Borough lands (see Map 3.2-6).

The 1996 *Cooper Landing Land Use Classification Plan* recommendations for Borough lands selection and State lands classification are based on four broad community goals:

- Maintain the scenic quality, unique character, and pristine setting of Cooper Landing.
- Encourage a safe environment for children, pedestrians, and tourists.
- Provide disposal of appropriate lands for public and private ownership, but avoid sudden community change.
- Maintain and provide for a community economic base.

The *Cooper Landing Land Use Classification Plan* recommended classifying more than 1,390 acres of land as “recreational” and another 2,280 acres as “preservation” land. Most of the balance is classified as “residential.”

While the *Cooper Landing Land Use Classification Plan* primarily applies to land already owned or selected by the Borough, it predated DNR’s *Kenai Area Plan* and provided recommendations on that plan, including State Management Unit 395. Unit 395 is recommended for State selection (and in turn for Borough selection) for a residential subdivision, with provisions for retaining the integrity of the Resurrection Pass Trail and surrounding habitat, a 200-foot “preservation greenbelt” along either side of a “Juneau Bypass” highway alternative, limited access, and no



**The Sterling Highway features many access points for local businesses and residences.**  
(Photo courtesy of Dan Burden)

roadside commercial development. The plan also states “NO access to or from the new alignment other than the departure from the existing road at either end of the bypass. The NO ACCESS issue is not a matter taken lightly by the community” (emphasis in original text). The reason given is that the community wants to avoid impacts to the community’s economic base that might occur by allowing commercial development along any new highway that would compete with commercial establishments in the existing community.

***Cooper Landing, Alaska, Walkable Community Project*** (LDN 2010a). In 2010, the community of Cooper Landing completed a plan for *Cooper Landing, Alaska, Walkable Community Project*, subtitled *Alternative transportation planning to address congestion and road impacts near the Russian and Kenai Rivers*. In April 2010, the *Walkable Community Project* plan was incorporated into the *Kenai Peninsula Borough Comprehensive Plan* by the Assembly

(Ordinance 2010-13). The *Walkable Community Project* plan echoes themes found also in a *Sterling Byways Corridor Partnership Plan* (discussed in Section 3.2.1.7). The *Walkable Community Project* plan identifies 17 “consensus projects” agreed upon by community participants in the planning process. Many of the projects are related to the Sterling Highway in the MP 45–60 Project area and include a broad array of measures to improve traffic flow and the overall character of the community to make it more user friendly for motorists and pedestrians. Consensus projects associated most closely with the Sterling Highway include:

- Clearly delineating entry and exit to businesses (creating driveways instead of broad pull-off areas).
- Creating a “gateway” feel to the area through addition of welcome signs or Kenai River signs.
- Improving portions of the existing highway to add shoulders and straighten curves.
- Providing pedestrian undercrossing of the highway bridge at the outlet of Kenai Lake and improving safety of the pedestrian walkway across the length of the bridge.
- Adding acceleration-deceleration/turning lanes throughout the community.

***Kenai Peninsula Borough Coastal Management Plan*** (KPB 1990). The *Kenai Peninsula Borough Coastal Management Plan* was adopted by the Borough Assembly in June 1990 and revised in 2007. The plan provides an information base and policies to assist the Borough in managing Borough land and resource use decisions within the coastal zone despite the Alaska Coastal Management Plan no longer being in effect. The plan sets coastal management boundaries to an elevation of 1,000 feet to protect water quality, to protect fish and wildlife use, and to improve recreational use of the Kenai River. The plan includes enforceable policies within the coastal zone. The Kenai River Center is responsible for reviewing projects that occur within the coastal zone and ensuring they comply with the Borough’s *Coastal Management Plan*. There is no State or Federal enforcement mechanism for work conducted within the coastal zone; however, Borough staff use Borough codes and review local, State, and Federal permit applications to ensure compliance with the plan (Mohorich, personal communication 2011).

### **3.2.1.7 Other Pertinent Plans**

Two other plans are included here because they relate to the Sterling Highway: The *North and South Sterling Byways Corridor Partnership Plan* and *Kenai Mountains-Turnagain Arm National Heritage Area Management Plan*. Both are plans by local or regional supporters of the plan, reflecting a desire for land use enhancements. Both are in support of programs that can provide funding for projects along highways. The project alternatives will be reviewed for consistency with these plans. In addition to these two plans, discussed below, the Russian River Land Act affects USFS, USFWS, and CIRI lands in the project area. It is discussed under land ownership in Section 3.1.1.5.

***North and South Sterling Byways Corridor Partnership Plan*** (Jensen Yorba Lott, Inc. 2008). The *North and South Sterling Byways Corridor Partnership Plan*, prepared for DOT&PF and local communities, was part of a nominating package that sought “national byway” status for the Sterling Highway Angler’s Paradise State Scenic Byway. While the highway did not receive national byway status, the plan remains current for the State designation of the highway (Moulton, personal communication 2013). The plan for the Sterling Highway is a “blueprint for tourism and infrastructure investments to serve both residents and visitors along the Sterling



Highway.” According to the DOT&PF byways program, the corridor management plan is a tool used by the local communities (a grassroots committee for the Sterling Highway) to share the recommendations on actions that stakeholders would like to see along the corridor (Moulton, personal communication 2013). It is not regulatory, but has been endorsed by Borough resolution.

The plan has specific recommendations to enhance the six traits that make a byway: recreational, cultural, scenic, natural, historical, and archaeological resources. The “Angler’s Paradise/North Sterling” implementation plan, which contains core recommendations within the MP 45–60 project area, addresses safety, seasonal congestion, and a bypass in the project area. The plan includes the following, specific to the MP 45–60 Project: “Coordinate with the Sterling Highway MP 45–60 Project to ensure Corridor Partnership Plan suggestions are built into the project design, including rest areas at each end of any bypass segment, pullouts along any new bypass with trails connecting to the old highway, and other suggestions listed.”

***Kenai Mountains-Turnagain Arm National Heritage Area Management Plan*** (KMTA 2012). The *Kenai Mountains-Turnagain Arm National Heritage Area Management Plan* proposes projects for funding through a Federal program designating National Heritage Areas, including historical signs along Sterling Highway in partnership with the *Cooper Landing Walkable Community Project* plan.

In March 2009, the U.S. Congress established the Kenai Mountains-Turnagain Arm National Heritage Area, which includes the MP 45–55 portion (CNF portion) of the project area, to the boundary of the KNWR.<sup>1</sup> This designation does not confer authority to manage or regulate land use. Rather, the National Heritage Area program provides grant funding for recreation, tourism, and historic preservation projects to community organizations. The community organization that has received funding is the Kenai Mountains Turnagain Arm Corridor Communities Association; the association published a management plan for the National Heritage Area in 2012. The plan notes that the area contains a “magnificent landscape ... with nationally significant historic and cultural value.” The National Park Service oversees the Federal funding appropriated and provides technical assistance for development of the Kenai Mountains-Turnagain Arm National Heritage Area.

### ***3.2.2 Environmental Consequences (KNWR Comprehensive Conservation Plan)***

#### **3.2.2.1 No Build Alternative**

##### **Direct and Indirect Impacts**

No Federal land would be acquired, developed, or directly used as a result of the No Build Alternative. Therefore, the alternative would be consistent with the *KNWR Comprehensive Plan* (USFWS 2010a).

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<sup>1</sup> The KMTA NHA plan is available at [www.kmtacorridor.org](http://www.kmtacorridor.org) under the Management Plan tab. Maps showing the NHA boundary appear in Chapter 5, for example on page 45.

### **3.2.2.2 Issues Applicable to the Build Alternatives**

There is a distinct difference between alternatives related to the KNWR. All alternatives except the Juneau Creek Alternative would remain within the existing Sterling Highway right-of-way across KNWR lands and therefore would have no direct effect on land use plans and management policy. Issues important to the KNWR include wildlife movement across the highway, which is addressed in Section 3.22, Wildlife.

### **3.2.2.3 Cooper Creek Alternative**

No KNWR land would be acquired, developed, or directly used as a result of the Cooper Creek Alternative outside the existing highway right-of-way. Therefore, no formal consistency determination would be required, and the alternative would appear to be consistent with the *KNWR Comprehensive Plan* (USFWS 2010a).

### **3.2.2.4 G South Alternative**

No KNWR land would be acquired, developed, or directly used as a result of the G South Alternative outside the existing highway right-of-way. Therefore, no formal consistency determination would be required, and the alternative would appear to be consistent with the *KNWR Comprehensive Plan* (USFWS 2010a).

### **3.2.2.5 Juneau Creek Alternative**

#### **Direct and Indirect Impacts**

Under the Juneau Creek Alternative, DOT&PF and FHWA would acquire new transportation right-of-way across a corner of the KNWR Mystery Creek Wilderness unit and a portion of the KNWR Intensive Management area. This would require an amendment to the KNWR Plan and, because a new transportation right-of-way in the KNWR would be an additional use of KNWR, the KNWR has indicated it would need to complete a Compatibility Determination to evaluate whether the activity would materially interfere with or detract from KNWR purposes and management. This determination is required under the provisions of the National Wildlife Refuge System Administration Act of 1966, as amended. For a use proposed for designated Wilderness areas, the USFWS must consider the intent of The Wilderness Act.

Wilderness, as defined by The Wilderness Act, is “untrammeled by man,” and “without permanent improvements or human habitation” (16 USC 1131-1136 1964). The Wilderness Act Section 4(c) specifically prohibits roads within any wilderness area except as necessary to meet the requirements for the administration of the area. ANILCA Title XI, however, outlines a procedural path to provide a transportation corridor across Wilderness (see Section 3.2.5). The authorization process would require approval by the President of the United States and then a joint resolution of Congress.

The USFWS identifies specific components to be documented for completing a compatibility determination. The following list provides the information, or reference to the Draft SEIS section providing the information, for the compatibility determination. Because ANILCA Title XI supersedes other law and regulation (in other words once Congress and the President make a decision), compatibility information may be less important to the decision-making process than it normally would be; nonetheless, the information is provided below.

The USFWS considers the following information when making a compatibility determination:

- (A) **Use.** Establish new transportation right-of-way easement.
- (B) **Refuge name.** Kenai National Wildlife Refuge.
- (C) **Establishing and acquisition authority(ies).** The KNWR was first established as the Kenai National Moose Range by Executive Order 8979 on December 16, 1941. The boundaries were modified, purposes expanded, and name changed to Kenai National Wildlife Refuge under the provisions of ANILCA on December 2, 1980 (16 USC 410hh-3233).
- (D) **KNWR purpose.** The primary purpose stated in Executive Order 8979 was to “... protect the natural breeding and feeding range of the giant Kenai moose on the Kenai Peninsula, Alaska...” ANILCA purposes for the KNWR include: “(i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to moose, bear, mountain goats, Dall sheep, wolves and other furbearers, salmonids and other fish, waterfowl and other migratory and nonmigratory birds; (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats; (iii) to ensure to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity with the refuge; (iv) to provide in a manner consistent with subparagraphs (i) and (ii), opportunities for scientific research, interpretation, environmental education, and land management training; and (v) to provide, in a manner compatible with these purposes, opportunities for fish and wildlife oriented recreation.” The Wilderness Act of 1964 purposes are to secure an enduring resource of wilderness, to protect and preserve the wilderness character of areas within the National Wilderness Preservation System, and to administer this wilderness system for the use and enjoyment of the American people in a way that will leave them unimpaired for future use and enjoyment as wilderness.
- (E) **National Wildlife Refuge System mission.** The mission of the National Wildlife Refuge system is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (P.L. 105-57 1997).
- (F) **Description of Use.** The proposed use would be the establishment of an additional 33.4-acre right-of-way easement for transportation purposes on the KNWR. DOT&PF would construct and operate a highway (see Section 2.6.5 in the Alternatives chapter) within the easement in perpetuity. Within this easement, 19.2 acres would be located at the southeast corner of the Mystery Creek Wilderness Unit. Another 14.2 acres would be located south of the existing highway to accommodate the intersection of the “old” highway with the Juneau Creek Alternative alignment. The highway corridor for this alternative would isolate another 17.4-acre parcel of Wilderness from the remainder of the Wilderness unit. The use of the corridor would be year-round, as is use of the highway today. The affected environment is described for a wide variety of resources in the other sections of Chapter 3.
- (G) **Availability of Resources.** DOT&PF would be responsible for the construction, maintenance, and operation of the new highway, as it is today; KNWR human resource commitments likely would change very little. KNWR would continue to monitor wildlife

movement and recreational activity in the highway area. Alaska State Troopers would patrol and respond to public safety issues on the highway.

- (H) **Anticipated impacts of the use.** DOT&PF and FHWA have worked with the USFWS to describe the affected environment and anticipated impacts within this Draft SEIS. Direct, indirect, and cumulative impacts on KNWR resources are addressed within the Environmental Consequences sections for each resource in Chapter 3 of this document. Specific resources include Noise (Section 3.15), Water Bodies and Water Quality (Section 3.13), Wetlands and Vegetation (Section 3.20 and Maps 3.20-1 and 3.20-2), and Wildlife (Section 3.22). A discussion of short-term impacts versus long-term impacts is provided in Section 3.25. The KNWR *Comprehensive Conservation Plan* (2010a) would need to be amended to address the proposed use. If the project were approved by the President and Congress under ANILCA Title XI, the plan amendment likely would not require further agency decision-making, however, it would require administratively updating plan documentation.
- (I) **Public Review and comment.** The KNWR provides an opportunity for public review and comment on proposed KNWR uses before issuing a final compatibility determination. DOT&PF will provide stakeholder and public mailing lists to support the USFWS process. Identifying the potential use in this Draft SEIS provides additional notice and opportunity for public comment during the SEIS comment period and public hearing process.
- (J) **Stipulations necessary to ensure compatibility.** Mitigation and environmental commitments that have been identified for this project are summarized in the Mitigation sections throughout this chapter and in Chapter 4.

Additional components of the compatibility determination would include a written explanation of the USFWS decision on the use's compatibility, a signature, and a concurrence signature once the determination had been made.

### **Construction Impacts**

No construction impacts are anticipated to affect the KNWR *Comprehensive Plan* and management policies.

### **Mitigation**

See item (J) above for mitigation and stipulations.

#### **3.2.2.6 Juneau Creek Variant Alternative**

### **Direct and Indirect Impacts**

No KNWR land would be acquired, developed, or directly used as a result of the Juneau Creek Variant Alternative outside the existing highway right-of-way. Therefore, no formal consistency determination would be required, and the alternative would appear to be consistent with the KNWR *Comprehensive Plan* (USFWS 2010a).

### **3.2.3      *Environmental Consequences (Chugach National Forest Plan)***

#### **3.2.3.1      No Build Alternative**

##### **Direct and Indirect Impacts**

For purposes of this document, it is assumed no Federal land would be acquired, developed, or directly used as a result of the No Build Alternative outside the existing highway right-of-way. No consistency determination would be required, and it appears that selection of the No Build Alternative would be consistent with the *Chugach National Forest Revised Land and Resource Management Plan* (USFS 2002a).

#### **3.2.3.2      Issues Applicable to the Build Alternatives**

This section evaluates the build alternatives against the standards and guidelines set forth in the *Chugach National Forest Revised Land and Resource Management Plan* (USFS 2002a) and with applicable standards and guidelines for management areas within the project area. Under the *Forest Plan*, the CNF is delineated into management prescriptions, each with their own desired conditions and supporting standards and guidelines.

When a project is not consistent with a USFS *standard*, a Forest Plan amendment is required or the project must be modified so that it is consistent. No plan amendment is required when a project is found to be inconsistent with a USFS *guideline*. FHWA and USFS have an agreement nationwide for use of national forest lands for highway needs, and an easement would be established for the use of the lands in question before construction. The following list identifies applicable forest-wide standards and guidelines that might apply to this project and the location in this Draft SEIS where information on the build alternatives' impacts can be found relative to each criterion:

**(A) *Air Quality Standard 1: “Comply with state standards for visible and particulate air quality.”***

The project area is not within a Federally designated air quality non-attainment area or maintenance area, and is not within an ADEC air quality area of concern for carbon monoxide or particulate matter with a size of 10 micrometers or less. This project is in an area where the State Implementation Plan for air quality does not contain any transportation control measures; therefore, the conformity procedures in 40 CFR § 93 do not apply (see Section 3.14).

**(B) *Soils Standard 1: “Implement Best Management Practices specified in the Soil and Water Conservation Handbook (FSH 2509.22).”***

Earth-moving activities related to highway construction have the potential to impact water quality. Impacts to water quality would be minimized through the use of BMPs and the implementation of an approved Storm Water Pollution Prevention Plan (SWPPP; see Section 3.13).

- (C) Soils Standard 2:** *“No ground disturbing activities greater than 0.1 acre shall be allowed on slopes with a Mass Movement Index rating of 4 unless a site specific landslide risk analysis demonstrates soil objectives would still be met.”*

Ground disturbance for this project would be an engineered activity. Areas deemed not geologically suitable for road construction are not being considered. Finished slopes created during ground disturbance would be kept flatter than the angle of repose (usually no steeper than 2:1, and preferably flatter) or would employ an engineered retaining wall (see also Section 3.12, Geology and Topography).

- (D) Soils Standard 3:** *“Prior to ground disturbing activities greater than  $\frac{1}{2}$  acre, a landslide risk analysis will be conducted on slopes between 56 and 72 percent. Proposed ground disturbing activities will be designed to avoid areas with high potential for the occurrence of a landslide.”*

Ground disturbance for this project would be an engineered activity. Areas deemed not geologically suitable for road construction are not being considered, cut slopes would be kept flatter than the angle of repose, fill slopes are designed for specification materials, and rock cut slopes are designed based on associated rock stability tests. See the design criteria in Chapter 2, the preliminary engineering report for the project (HDR 2014a), and a geotechnical report for the project (R&M 2001a).

- (E) Soils Standard 4:** *“Evaluate soil stability and potential soil mass wasting effects prior to ground disturbing activities greater than  $\frac{1}{2}$  acre on fine textured soils of lacustrine origin.”*

Geotechnical investigations have been conducted for the project to be aware of any fine-grained soils prone to subsidence or liquefaction. All due care would be taken to avoid these materials or address their mitigation during the design evaluation. The rejection of certain alignments was based in part on avoiding these types of soils. See, for example, the reasons for not pursuing the “3R Alternative” in Chapter 2. In other cases, alignments were shifted to avoid such soils (e.g., the crossing of Juneau Creek was moved north on the Juneau Creek Alternative to avoid unstable soils).

- (F) Fish, Water, and Riparian Areas Guideline 1:** *“Riparian management activities will be designed to meet the Stream Channel Process Group Objectives and Desired Conditions contained within the Aquatic Ecosystem Management Handbook.”*

Riparian objectives and desired conditions would be addressed through consultation with the USACE for the Section 404 Permit process and with ADF&G for Title 16 permits (see Section 3.21). Water quality mitigation measures are detailed in Section 3.13.2. Essential fish habitat mitigation is detailed in Section 3.21.2.

- (G) Vegetation Management Guideline 4:** *“Use native plant species in revegetation/restoration projects when natural revegetation conditions are not favorable.”*

Native seed sources would be used for revegetation (see Section 3.20).

***(H) Vegetation Management Guideline 5: “Incorporate exotic plant prevention and control into project planning and design.”***

Introduction of invasive and exotic plant species would be minimized through mitigation measures, such as having construction equipment cleaned thoroughly before it enters the site (see Section 3.20).

***(I) Threatened, Endangered, and Sensitive Plant Species Standard 1: “Collecting or disturbing any threatened, endangered, or sensitive plant is prohibited unless authorized.”***

The build alternatives are not expected to adversely impact sensitive plant species (see Section 3.20).

***(J) Threatened, Endangered, and Sensitive Plant Species Guideline 1: “Avoid, minimize, or mitigate the effects of human activities in areas containing sensitive plant populations.”***

Based on the review of published data, field survey data, and consultation with USFS biologists, there is a low likelihood of sensitive plant species occurring within the project area. The build alternatives are not expected to adversely impact sensitive plant species (see Section 3.20).

***(K) General Wildlife Standard 1: “Require disposal or removal of garbage from all Forest Service permitted or approved activities. Require food and garbage to be stored in bear-proof containers or methods making it unavailable to wildlife.”***

Bear-proof containers will be used at construction sites, added at any new trailheads where trash receptacles are provided (e.g., the Resurrection Pass trailhead; see Sections 3.8 and 3.22).

***(L) General Wildlife Guideline 1: “Apply seasonal restrictions on human activities, when appropriate, to reduce disturbance in important habitat areas (birthing areas, nesting areas and winter ranges).”***

Efforts would be made to reduce disturbance in important habitat areas (see Sections 3.8 and 3.22). Timing windows for construction are detailed in Section 3.22.

***(M) Brown Bear Habitat Management Standard 1: “Within the 750-foot brown bear management zone (areas of localized feeding areas) new road construction is not allowed.”***

Neither the USFS nor other agencies have formally delineated brown bear management zones; however, general concern has been raised by agencies about brown bear use near the confluence of the Kenai and Russian rivers, and near the confluence of the Kenai River and Juneau Creek. At the confluence of the Russian River there is already seasonal human use associated with it being a popular fishing location. In addition, there would be some physical separation between all the alternatives (which lie north of the Kenai River) and the confluence, which lies on the south side of the Kenai River. However, the G South, Cooper Creek, and Juneau Creek Variant alternatives would come within a 750-foot buffer of the confluence, as does the existing Sterling Highway.

As part of this project, wildlife agencies including ADF&G and USFS have generally identified the area from the confluence of Juneau Creek and the Kenai River upstream on Juneau Creek to a location where the canyon begins to narrow as an important brown bear feeding area. The G South Alternative would come within a 750-foot buffer of this stream segment. A portion of this area is Forest land; the majority encompasses State-owned land. At the location where the G South Alternative intersects with the 750-foot buffer, there would be a physical separation between the alternative and the feeding area provided by a bridge that would be located, at its highest point, approximately 200 feet above the canyon floor (allowing bears access to the area). Brown bear mitigation actions would be undertaken and are currently being determined based on consultation with local agencies, including USFS (see Sections 3.20, 3.22.1.1, 3.22.2, and 4.7.4).

***(N) Brown Bear Habitat Management Guideline 1: “A minimum one-mile avoidance distance is recommended, but could vary depending on site-specific circumstances, between areas of concentrated human activities and areas of important seasonal brown bear concentrations.”***

There are presently no areas specifically delineated as areas of important seasonal brown bear concentrations; the closest is as discussed in the notes for Standard 1 immediately above. All of the alternatives lie within a 1-mile buffer of the confluence of the Kenai and Russian rivers. In addition, all of the alternatives lie within the 1-mile buffer of the confluence of Juneau Creek and the Kenai River. The existing Sterling Highway also lies within the 1-mile buffer. As stated in the notes for Brown Bear Habitat Management Standard 1, the area surrounding the confluence of the Kenai and Russian rivers already experiences seasonal human use. In addition, within the 1-mile buffer of the confluence of Juneau Creek and the Kenai River, the Juneau Creek alternatives and the G South alternative would have a physical separation between the highway and the feeding area, provided by high bridges.

Brown bear impact mitigation will be undertaken; details of mitigation measures currently are being determined based on consultation with agencies, including USFS (see Sections 3.20, 3.22.1.1, 3.22.2, and 4.7.4). Mitigation will reduce the impacts of the road within 1 mile of seasonal brown bear concentrations.

***(O) Mountain Goat and Dall Sheep Habitat Management Guideline 1: “Locate concentrated human activities away from important wintering, kidding, and lambing habitat.”***

Highways may be a form of concentrated human activity but are less intrusive and more predictable than areas where individual people congregate, such as campground or viewpoints. None of the alternatives comes within 1 mile of important kidding or lambing habitat (see Section 3.22.1.3). While the Juneau Creek alternatives would be within 1 mile of the Dall sheep winter range, the alternatives would be separated in elevation from these habitat areas by approximately 1,000 feet (see Map 3.22-3).



**(P) Raptor Nest Protection Management Standard 1: “Follow bald eagle nest protection standards outlined in the Memorandum of Understanding (MOU) with USFWS.”**

There are three nests within 330 feet of the existing Sterling Highway, of which two are active. There are four additional nests, two active and two inactive, located farther than 330 feet from the existing highway, but closer than 660 feet. All of these nests already are located within one or both of the USFWS-defined buffer zones in an area of high traffic and activity along the Kenai River. It is not anticipated that any of the build alternatives would have a permanent direct impact on bald eagle nesting in the project area. Under the MOU, the five-chain (330-foot) management zone must be maintained for active and inactive nests. A request for a variance would be made to USFWS for unavoidable encroachment upon the 330-foot nest tree management zone (see Section 3.22 in general, and specifically Section 3.22.7.1). For construction of the Cooper Creek Alternative, one material disposal site (for cleared vegetation and soils that cannot be used in the road construction) would be located approximately 600 feet south of one known bald eagle nest. DOT&PF would work with USFWS to determine a mitigation/monitoring plan to avoid and minimize impacts to this bald eagle nest. Should a disturbance permit be required, an application would be submitted prior to construction of that section of roadway (see Section 3.22). The removal of riparian habitat used by bald eagles for breeding and foraging could reduce roosting and foraging habitat in the area. However, bald eagles nesting in the project area are likely tolerant of the existing noise and disturbance from highway traffic because they consistently nest in this area. Coordination with USFWS will determine if site-specific investigations will be necessary to identify important habitat areas and verify that winter habitat requirements are satisfied.

**(Q) Raptor Nest Protection Management Guideline 1: “Prevent continuous disturbance of goshawk nesting habitat within a 660-foot radius of the nest during the active nesting season (generally March 1 to July 31).”**

It not anticipated that goshawks are present in the project area. However, clearing of trees will occur during the late summer and winter months, outside the nesting period (see Section 3.22).

**(R) Threatened and Endangered Species Standard 1: “All projects will comply with requirements of the Endangered Species Act, Marine Mammal Protection Act (and their implementing regulations), as well as other applicable federal and state laws and Forest Service Policy (FSM 2670).”**

No Federally listed threatened or endangered species occur in the project area (see Section 3.22).

**(S) Heritage Resources Standard 1: “Heritage resource site surveys are required for any surface or subsurface activities disturbing more than one cumulative square meter of ground. In addition, in areas of known heritage resources, sites or districts on or eligible for the National Register of Historic Places, site surveys are required for any surface or subsurface ground disturbance.”**

The Section 106 process for the project is consistent with this standard (see Section 3.9). Identification of the area of potential effect, preliminary site surveys, identification of

potentially eligible properties, and findings of effect have been completed through consultation with consulting parties, including the USFS. As part of a phased approach, further site surveys for cultural resources are expected once an alternative has been selected.

**(T) Access for Subsistence Activities on National Forest System Lands Standard 1:** *“On federal public lands within the Chugach National Forest, use of snowmobiles, motorboats and other means of surface transportation traditionally employed for subsistence purposes by local residents shall continue as per ANILCA, Sec. 811.”*

The ANILCA Section 810 Subsistence Evaluation concluded that there was no reasonably foreseeable possibility of a significant restriction of subsistence uses from any of the reasonable alternatives (see Section 3.10).

**(U) Fuels Treatment Guideline 1:** *“Treat activity fuels (those fuels created as a result of vegetation management activities) adjacent to roads and trails by locating slash piles that are scheduled for burning outside meadows or riparian areas. Use a buffer distance designed to keep sediment, ash and debris out of channels. For federal, state and Forest development roads classified as arterials or collectors, remove or treat 70 to 90 percent of the activity fuels seen from the road’s edge up to a maximum distance of 300 feet. Treat debris within one year of vegetation treatment completion.”*

Although this project is not a USFS vegetation management activity, tree and vegetation clearing for road building would be completed consistent with the guideline (see Section 3.20).

### **3.2.3.3 Cooper Creek Alternative**

#### **Direct and Indirect Impacts**

Under the Cooper Creek Alternative, the alignment falls under the Fish, Wildlife and Recreation Management Area prescription and the Major Transportation/Utility Systems Management Area prescription within the *Chugach National Forest Land and Resource Management Plan* (USFS 2002a). These management prescriptions are relatively unrestrictive—the maximum Recreational Opportunity Spectrum class is Roaded Natural, and “roads built by others” typically are allowed. Because this alternative crosses lands with these management prescriptions, it would be expected to have little management conflict. Land management acreages and boundaries designated by the plan would change. The plan would need to be updated, either with an amendment or in the next scheduled Forest Plan update, to specifically identify the new highway alignment, including any appropriate management prescription changes. The only forest-wide standard from the list above in Section 3.2.3.2 that would suggest a need for amendment of the Forest Plan would be item M, Brown Bear Habitat Management Standard 1. The Cooper Creek Alternative would follow the existing highway near the confluence of the Kenai and Russian rivers and, like the existing highway, would be within 750 feet of the confluence.

#### **Construction Impacts**

No construction impacts are anticipated to affect forest plans and policies.

## **Mitigation**

Mitigation for impacts to brown bears is addressed in Section 3.22, Wildlife.

### **3.2.3.4 G South Alternative**

#### **Direct and Indirect Impacts**

The G South Alternative would cross areas classified as Fish and Wildlife Conservation Area Management Area, Fish, Wildlife and Recreation Management Area, and Major Transportation/Utility Systems Management Area. The latter two management prescriptions are relatively unrestrictive—the maximum Recreational Opportunity Spectrum class is Roaded Natural, and “roads built by others” typically are allowed. However, the northernmost arc of the G South Alternative would pass in and out of the edge of the Fish and Wildlife Conservation Area Management Area, which is more restrictive. Overall, this alignment would be expected to have little management conflict. However, the road would not be consistent with the Fish and Wildlife Conservation Area prescription, in which Recreational Opportunity Spectrum classifications fall in the range from Primitive to Semi-Primitive Motorized. In this management area, new roads built by the USFS generally are not allowed, and “roads built by others” are conditional (USFS 2002a). Land management acreages and boundaries designated by the *Chugach National Forest Land and Resource Management Plan* (USFS 2002a) would change. The plan would need to be updated, either with an amendment or in the next scheduled Forest Plan update, to specifically identify the new highway alignment, including any appropriate management prescription changes. The only forest-wide standard from the list above in Section 3.2.3.2 that would suggest a need for amendment of the Forest Plan would be item M, Brown Bear Habitat Management Standard 1. The G South Alternative would follow the existing highway near the confluence of the Kenai and Russian rivers and, like the existing highway, would be within 750 feet of the confluence. It also would cross over Juneau Creek on a new bridge and would be within 750 feet of this riparian area that is valuable for brown bear feeding and resting.

#### **Construction Impacts**

No construction impacts are anticipated to affect forest plans and policies.

## **Mitigation**

Mitigation for impacts to brown bears is addressed in Section 3.22, Wildlife.

### **3.2.3.5 Juneau Creek and Juneau Creek Variant Alternatives**

#### **Direct and Indirect Impacts**

Under the Juneau Creek and Juneau Creek Variant alternatives, the alignment would cross lands classified with the following management prescriptions: Fish, Wildlife and Recreation Management Area; Major Transportation/Utility Systems Management Area; Fish and Wildlife Conservation Area Management Area; and Backcountry Management Area. The Juneau Creek and Juneau Creek Variant alternatives would cross CNF lands near Juneau Creek Falls that are classified Backcountry (west of the canyon in this area) and Fish and Wildlife Conservation Area (principally east of the canyon). Construction of these alternatives near Juneau Falls and construction of a new trailhead and pullout in the Juneau Creek Canyon area would be expected to attract more recreational users than the management plan calls for in Fish and Wildlife

Conservation Area or Backcountry management areas, with Recreational Opportunity Spectrum classifications in the range from Primitive to Semi-Primitive Motorized. These areas are managed so that users encounter fewer than 15 other parties per day on trails, and new roads built by the USFS generally are not allowed and “roads built by others” are conditional (USFS 2002a). Construction would make the area more accessible to more users, but would change the area from a backcountry experience to a front country experience. These alternatives also would cross Resurrection Pass Trail and the Juneau Falls Recreation Area in this location, and some of the area is classified by USFS as the Resurrection IRA, an area identified as potentially meeting qualifications for future Federal Wilderness designation but not managed as Federal Wilderness (see Section 3.2.4, below). These areas are a small portion of the overall alignment; most of the segment built on new alignment is located on lands with less-restrictive management classifications where new roads typically are allowed and encounters with others are expected to be greater.

Under the Juneau Creek and Juneau Creek Variant alternatives, areas of land with specific management prescriptions and boundaries designated by the *Chugach National Forest Land and Resource Management Plan* (USBEA 2011) would change. The plan would need to be updated, either with an amendment or in the next scheduled forest plan update, to specifically identify the new highway alignment, including any appropriate management prescription changes.

The only forest-wide standard from the list above in Section 3.2.3.2 that would suggest a need for amendment of the Forest Plan would be item M, Brown Bear Habitat Management Standard 1. The Juneau Creek Variant Alternative would rejoin the existing highway near the confluence of the Kenai and Russian rivers at the CNF western boundary and, like the existing highway, would be within 750 feet of the confluence. The Juneau Creek Alternative would be located farther away and at higher elevation in this area, more than 750 feet from the confluence. Both alternatives would cross over Juneau Creek on a new bridge, but the bridge would be located at high elevation over the creek, there would be no construction in the base of the canyon, and this part of the canyon is thought to be less valuable for bear feeding than areas slightly farther downstream, where the canyon begins to open.

### **Construction Impacts**

No construction impacts are anticipated to affect forest plans and policies.

### **Mitigation**

Mitigation for impacts to brown bears is addressed in Section 3.22.

## **3.2.4 Environmental Consequences (Federal Management—USFS Roadless Areas)**

### **3.2.4.1 No Build Alternative**

#### **Direct and Indirect Impacts**

No Federal land would be acquired, developed, or directly used as a result of the No Build Alternative outside the existing highway right-of-way. No use of IRAs would occur, and no indirect impacts to these roadless areas would be expected (USFS 2002a).

### **3.2.4.2 Issues Applicable to the Build Alternatives**

The USFS is expected to use information in this EIS to consider the effects of the alternatives on IRAs and on the “roadless area characteristics” addressed in the Roadless Area Conservation Rule (see Section 3.2.1.3 for background, and see Map 3.2-3). The Roadless Rule provides a general prohibition on construction of new roads within IRAs but also provides a potential exception for projects like the Sterling Highway Project. The prohibition on road building is excepted if:

The Secretary of Agriculture determines that a Federal Aid Highway project, authorized pursuant to Title 23 of the United States Code, is in the public interest or is consistent with the purposes for which the land was reserved or acquired and no other reasonable and prudent alternative exists... [36 CFR § 294.12(b)(6)]

The following subsections and tables address roadless area characteristics with cross references to other parts of this EIS as necessary, to assist the USFS in its determination.

### **3.2.4.3 Cooper Creek Alternative**

#### **Direct and Indirect Impacts**

The Cooper Creek Alternative would cross a small, isolated block of land that technically is part of the Kenai Lake IRA but is separated from the bulk of the IRA and is now surrounded by non-Forest land. This parcel would not qualify as “roadless” if a roadless area inventory were begun today. Table 3.2-1 reports the acreages of loss from this portion of the Kenai Lake IRA for the Cooper Creek Alternative. The table also reports in general the expected impacts to roadless area characteristics common to all roadless areas. The “Roadless Area Characteristics” portion of the table principally cross-references other sections of this Draft SEIS for greater detail. The CNF plan could require an amendment because of IRA land use.

**Table 3.2-1. Impacts to Inventoried Roadless Areas—Cooper Creek Alternative**

<b>Direct effects to Kenai Lake<sup>a</sup> IRA</b>	<b>Impact</b>
IRA lands incorporated into right-of-way	3.8 acres <sup>b</sup> of 213,200 total acres (0.002%)
Cumulative total IRA lands traversed	0.1 mile <sup>b</sup>
Isolated portions of IRA <sup>b</sup>	Not applicable <sup>b</sup>
<b>Roadless area characteristics</b>	<b>Impact</b>
High quality or undisturbed soil, water, and air	Disturbance to soils expected. No impact to water courses and water quality within the IRA. Soils, water, and air quality are addressed respectively in Sections 3.12, 3.13, and 3.14.
Sources of public drinking water	No impact expected. See Section 3.13 and Map 3.13-2.
<b>Roadless area characteristics</b>	<b>Impact</b>
Diversity of plant and animal communities	No impact anticipated to <i>diversity</i> . Other wildlife impacts are addressed in Section 3.22, and vegetation is addressed in Section 3.20.
Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land	No threatened or endangered species occur in the project area. Impacts to large mammal habitat would occur within the IRA, but most habitat impact would not be within an IRA. Sections 3.20 and 3.22 address vegetation/habitat in general and sensitive species of wildlife.
Primitive, semi-primitive nonmotorized, and semi-primitive motorized classes of dispersed recreation	Minimal impact to recreation is anticipated within the IRA area that the Cooper Creek Alternative would cross. People walking up the creek bank or fishing in Cooper Creek would be beneath the new bridge, but there is no trail or recreation facility in this area.
Reference landscapes	No impact anticipated.
Natural-appearing landscapes with high scenic quality	Alteration of landscapes is anticipated (trees cut, road and bridge built). However, the IRA portion affected is very small. Visual effects in general are addressed in Section 3.16.
TCPs and sacred sites	No impact to historic properties or TCPs is anticipated within this small IRA area. These issues are addressed overall in Section 3.9.

<sup>a</sup>There would be no impact to the Resurrection IRA under this alternative. Acreages of impact reported in this table are based on the project highway right-of-way. The USFS generally excludes a 0.5-mile buffer along a road from an IRA.

<sup>b</sup>“Isolated” means a portion of IRA severed from the rest of the IRA and no longer of a size that would qualify as “roadless” if IRAs were being delineated today. The portion of the IRA impacted under this alternative is a small, isolated part that is effectively a “donut hole” in otherwise non-Forest land. It already is an isolated parcel that would no longer qualify as “roadless” by size. The State and Borough land surrounding this Federal land is principally intact and without roads.

## Construction Impacts

The impacts to the roadless area are caused by the project’s physical construction and are addressed above.

## Mitigation

No mitigation is proposed.

### 3.2.4.4 G South Alternative

#### Direct and Indirect Impacts

Table 3.2-2 reports the acreages of loss from the Resurrection IRA for the G South Alternative. The highway would sever portions of the southern edge of the IRA from the rest of the IRA, reported in the table as “isolated” acreage (see also Map 3.2-3). The table also reports in general the expected impacts to roadless area characteristics common to all roadless areas. The “Roadless Area Characteristics” portion of the table principally cross-references other sections of this Draft SEIS for greater detail. The reduction in the roadless area would be permanent. The CNF plan would require an amendment because of IRA land use.

**Table 3.2-2. Impacts to Inventoried Roadless Areas—G South Alternative**

<b>Direct effects to Resurrection<sup>a</sup> IRA</b>		<b>Impact</b>
IRA lands incorporated into right-of-way	48.4 acres of 224,600 total acres (0.02%)	
Cumulative total IRA lands traversed	1.1 miles	
Isolated portions of IRA <sup>b</sup>	74.1 acres (of 224,600 acres in this IRA—0.03%) <sup>b</sup>	
<b>Roadless area characteristics</b>		<b>Impact</b>
High quality or undisturbed soil, water, and air	Disturbance to soils expected. Low impact to water courses and water quality. Soils, water, and air quality are addressed respectively in Sections 3.12, 3.13, and 3.14.	
Sources of public drinking water	No impact expected. See Section 3.13 and Map 3.13-2.	
Diversity of plant and animal communities	No impact anticipated to <i>diversity</i> . Other wildlife impacts are addressed in Section 3.22, and vegetation is addressed in Section 3.20.	
Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land	No threatened or endangered species occur in the project area. Impacts to large mammal habitat, including habitat fragmentation and direct habitat loss, are expected. Section 3.22 addresses large mammals. Sections 3.20 and 3.22 address vegetation/habitat in general and sensitive species of wildlife.	
Primitive, semi-primitive nonmotorized, and semi-primitive motorized classes of dispersed recreation	Low impact to semi-primitive recreation is anticipated (principally Bean Creek Trail). See Section 3.8 and Chapter 4.	
Reference landscapes	No impact anticipated.	
Natural-appearing landscapes with high scenic quality	Alteration of landscapes classified by the USFS as having high to very high scenic quality is anticipated (trees cut, road built). Visual effects in general are addressed in Section 3.16.	
TCPs and sacred sites	No impact to historic properties or TCPs is anticipated within the IRA. These issues are addressed overall in Section 3.9.	

<sup>a</sup> There would be no impacts to the Kenai Lake IRA under this alternative. Acreages of impact in this table are based on the project highway right-of-way. The USFS generally excludes a 0.5-mile buffer along a road from an IRA.

<sup>b</sup> The highway would sever portions of the southern edge of the IRA from the rest of the IRA. Acreage reported is the total of these areas that would lie south of the highway right-of-way and that would no longer qualify as “roadless” if IRAs were being delineated today. Also presented is the total acreage of CNF land within the IRA.



### **Construction Impacts**

The impacts to the roadless area are caused by the project's physical construction and are addressed above.

### **Mitigation**

No mitigation is proposed.

#### **3.2.4.5 Juneau Creek and Juneau Creek Variant Alternatives**

### **Direct and Indirect Impacts**

Table 3.2-3 reports the acreages of loss from the Resurrection IRA for the Juneau Creek and the Juneau Creek Variant alternatives. The highway would sever portions of the southern edge of the IRA from the rest of the IRA, reported in the table as "isolated" acreage (see also Map 3.2-3). The table also reports in general the expected impacts to roadless area characteristics common to roadless areas. The "Roadless Area Characteristics" portion of the table principally cross-references other sections of this Draft SEIS for greater detail. The CNF plan would require an amendment because of IRA land use.

### **Construction Impacts**

The impact to the roadless area is caused by the project's physical construction; however, the impacts to the policy are considered direct and permanent, and are therefore addressed above.

### **Mitigation**

No mitigation is proposed.

**Table 3.2-3. Impacts to Inventoried Roadless Areas—Juneau Creek Alternative and Juneau Creek Variant Alternative**

Direct effects to Resurrection <sup>a</sup> IRA	Impact	
	Juneau Creek Alternative	Juneau Creek Variant Alternative
IRA lands incorporated into right-of-way	127.5 acres of 224,600 total acres (0.06%)	96 acres of 224,600 total acres (0.04%)
Cumulative total IRA lands traversed	3.3 miles	2.4 miles
Isolated portions of IRA <sup>b</sup>	633.3 acres (of 224,600 total acres in this IRA—0.3%) <sup>b</sup>	588.8 acres (of 224,600 total acres in this IRA—0.3%) <sup>b</sup>
Roadless Area Characteristics	Impact Issues Common to these Alternatives	
High quality or undisturbed soil, water, and air	Disturbance to soils expected. Low impact to water courses and water quality. Soils, water, and air quality are addressed respectively in Sections 3.12, 3.13, and 3.14.	
Sources of public drinking water	No impact expected. See Section 3.13 and Map 3.13-2.	
Diversity of plant and animal communities	No impact anticipated to <i>diversity</i> . Other wildlife impacts are addressed in Section 3.22 and vegetation is addressed in Section 3.20.	
Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land	No threatened or endangered species occur in the project area. Impacts to large mammal habitat, including habitat fragmentation and direct habitat loss, are expected. Mitigation includes a wildlife movement study that is likely to lead to construction of bridge or tunnel wildlife crossings. Sections 3.20 and 3.22 address vegetation/habitat in general and sensitive species of wildlife.	
Primitive, semi-primitive nonmotorized, and semi-primitive motorized classes of dispersed recreation	Impact to semi-primitive recreation is anticipated, particularly crossing the 38-mile Resurrection Pass Trail 3.4 miles into its length. Also Bean Creek Trail. The level of use in the upper Juneau Creek valley (part of the remaining IRA) likely would increase, and the recreation experience likely would become less “primitive” as a result. Discussion of recreation impacts associated with these trails and surrounding areas appears in Section 3.8 and Chapter 4.	
Reference landscapes	No impact anticipated. Portions of the IRAs in the Juneau bench area have commercial logging and habitat enhancement, and likely would not be useful as reference landscapes.	
Natural appearing landscapes with high scenic quality	Alteration is anticipated (trees cut, road and bridge built). Visual effects in general are addressed in Section 3.16.	
TCPs and sacred sites	Both alternatives would create new highway on land where the IRA, the Sgillan Archaeological District, and the Confluence TCP overlap. Impacts to delineated archaeological sites within the TCP and to the existing look and feel of the TCP are expected along the NW edge of the TCP, at the SW edge of the IRA. These issues are addressed overall in Section 3.9.	

<sup>a</sup> There would be no impacts to the Kenai Lake IRA under this alternative. Acreages of impact reported in this table are based on the project highway right-of-way. The USFS generally excludes from an IRA a 0.5-mile buffer along a road.

<sup>b</sup> The highway would sever portions of the southern edge of the IRA from the rest of the IRA. Acreage reported is the total of these several areas that would lie south of the highway right-of-way and that would no longer qualify as “roadless” if IRAs were being delineated today. Also presented is total acreage of CNF land within the IRA.

### **3.2.5 Environmental Consequences (Federal Management—ANILCA Title XI)**

#### **3.2.5.1 No Build Alternative**

No need for additional right-of-way across CSUs would occur under the No Build Alternative. Therefore, there would be no need address ANILCA Title XI policy.

#### **3.2.5.2 Issues Applicable to the Build Alternatives**

The following sections explain how ANILCA Title XI applies to the alternatives and explains the eight ANILCA factors as they apply to the those alternatives that affect the Resurrection Pass Trail and the KNWR subject to ANILCA Title XI.

#### **3.2.5.3 Cooper Creek Alternative**

The Cooper Creek Alternative would have no effect on CSUs identified under ANILCA. ANILCA Title XI would not apply.

#### **3.2.5.4 G South Alternative**

The G South Alternative would have no effect on CSUs identified under ANILCA. ANILCA Title XI would not apply.

#### **3.2.5.5 Juneau Creek and Juneau Creek Variant Alternatives**

##### **Direct and Indirect Impacts**

###### *Juneau Creek Alternative*

The Juneau Creek Alternative would cross Resurrection Pass Trail (see Map 3.8-1) and would cross a corner of the Mystery Creek Wilderness unit within the KNWR (Map 3.2-1). ANILCA Title XI would apply to both of these CSUs. USFWS, USFS, USACE, and FHWA would need to make findings under Title XI relative to their areas of authority. The paragraphs below address the eight factors (nine factors for a decision for the KNWR) listed in ANILCA 1104(g)(2) to provide the information the agencies would need to make the necessary findings.

###### *Juneau Creek Variant Alternative*

The Juneau Creek Variant Alternative would cross Resurrection Pass Trail. ANILCA Title XI would apply to this CSU, and the USFS, USACE, and FHWA would need to make findings relative to their authorities. This section (below) addresses the eight factors listed in ANILCA 1104(g)(2) to help the agencies make the necessary findings.

##### **ANILCA Factors**

The paragraphs below are meant to provide cross-reference to other parts of the Draft SEIS where the ANILCA factors are discussed. The eight topics below would apply to ANILCA Title XI decisions for the Resurrection Pass Trail for both the Juneau Creek and Juneau Creek Variant alternatives. The eight factors, plus a ninth listed below, would apply to a Title XI decision for the KNWR Mystery Creek Wilderness (for the Juneau Creek Alternative only).

*(A) “The need for, and economic feasibility of the transportation or utility system”*

Chapter 1, Purpose and Need, addresses the need for the project. See (B) below regarding the need for a given alternative to be located within or across a CSU.

*(B) “Alternative routes and modes of access, including a determination with respect to whether there is any economically feasible and prudent alternative to the routing of the system through or within a conservation system unit, national recreation area, or conservation area and, if not, whether there are alternative routes or modes which would result in fewer or less severe adverse impacts upon the conservation system unit.”*

ANILCA 1104(g)(2)(B) indicates that the agencies shall consider “whether there is any economically prudent and feasible alternative” that would avoid the CSUs and alternatives that would result in fewer or less severe adverse impacts on the CSUs. This is very similar to the analyses needed under Section 4(f) law. See Chapter 4 and its discussions of avoidance and minimization of harm.

Chapter 2, Alternatives, explains the screening process behind selecting the reasonable alternatives for the Draft SEIS, including the Juneau Creek and Juneau Creek Variant alternatives, which cross CSUs. Section 3.5.2.2 in Economic Environment includes cost estimates of the various alternatives, to assist the agencies in considering economic feasibility. Section 4.4 in the Section 4(f) Evaluation chapter provides greater detail on alternatives that would avoid properties protected by Section 4(f), including both the Resurrection Pass Trail and the KNWR. Section 4.4.2 also addresses different modes (ferry) and the overall picture of protected lands on and adjacent to the Kenai Peninsula.

*(C) “The feasibility and impacts of including different transportation or utility systems in the same area.”*

Any future co-location of different transportation or utility systems would be separate uses of the conservation system units and would require separate consideration under ANILCA Title XI. No proposal or need for a power transmission or fiber optic line, pipeline, or railroad in the same corridor as the highway has been proposed or identified. However, if one were proposed, locating it adjacent to the proposed or existing Sterling Highway or in the highway right-of-way easement would be likely to minimize impact to Resurrection Pass Trail and KNWR Wilderness when compared to creating a separate easement across these CSUs. For some purposes, such as a petroleum pipeline or railroad, it may not be feasible or may be prohibitively expensive to place it at the same grades as those proposed for the highway on the new alignment (maximum 6 percent grades), and there may not be space in the narrow existing highway right-of-way easement that is constrained by steep slopes and the Kenai River banks. A power transmission line already exists in the project area (it crosses the KNWR CSU) and likely would be used instead of the highway right-of-way easements for upgrades or fiber-optic cables. Railroads and pipelines on this route are not considered likely uses in the long-term future.

*(D) “Short- and long-term social, economic, and environmental impacts of national, State, or local significance, including impacts on fish and wildlife and their habitat, and on rural, traditional lifestyles”*

ANILCA 1104(g)(2)(D) indicates that the agencies must consider a broad range of impacts, and specifies consideration of “fish and wildlife and their habitat” and “rural, traditional lifestyles.”

All of Chapter 3 addresses the broad range of potential impacts of the alternatives. Social and economic impacts are addressed particularly in Sections 3.3, Social Environment; 3.4, Housing and Relocation; and 3.5, Economic Environment. Fish and wildlife impacts are addressed in Sections 3.21 and 3.22, and further information on habitat may be found in Section 3.20, Wetlands and Vegetation.

*(E) “Impacts, if any, on the national security interests of the United States, that may result from approval or denial of the application for a transportation or utility system”*

National security interests are not explicitly spelled out elsewhere in the Draft SEIS. No substantial national security issues are known. However, the Sterling Highway is part of the Strategic Highway Network (STRAHNET) of highways identified for Department of Defense needs, as well as part of the National Highway System and Interstate Highway System, and is the only road connection between the North American road and transportation system and the Kenai Peninsula communities of Sterling, Kenai, Soldotna, Nikiski, Homer, and others. As part of STRAHNET, in case of a national emergency or disaster, the highway would be the critical overland transportation link for residents on the Kenai Peninsula and would provide ground transport routes for military supplies and troop deployments in case of a foreign invasion or threat. The purpose and need for the project expressed in Chapter 1 addresses these issues and the importance of the National Highway System and STRAHNET.

*(F) “Impacts that would affect the purposes for which the Federal unit or area was established”*

The Section 4(f) Evaluation (Chapter 4) describes the purposes for which the KNWR and Resurrection Pass Trail were established, and the effects to the activities, features, and attributes of these properties. Refer specifically to Sections 4.2.3 and 4.2.5.

*(G) “Measures which should be instituted to avoid or minimize negative impacts”*

Each section of Chapter 3 details mitigation for all alternatives. Sections on Parks and Recreation (3.8) and on Wildlife (3.22) and Chapter 4 include mitigation associated with Resurrection Pass Trail and the KNWR, including wildlife movement in and out of the KNWR.

*(H) “The short- and long-term public values which may be adversely affected ...versus the short- and long-term public benefits....”*

The entire Draft SEIS presents information for weighing public values adversely affected versus public benefits of approving the project. Specifically, Chapter 1 describes the Purpose and Need. Public benefits also are addressed in Section 3.6, Transportation. The Section 4(f) Evaluation (Chapter 4) is the most focused on potential adverse effects to Resurrection Pass Trail and the KNWR. Refer specifically to Sections 4.2.4 and 4.2.3. The evaluation of least overall harm in Section 4.8 also is a focused summary and discussion of tradeoffs. Section 3.25 addresses “Short-Term Uses Versus Long-Term Productivity” in general. Use of the Resurrection Pass Trail buffer by both alternatives would change but not reduce or eliminate the long-term public values of the recreation resource, and the changes would be mitigated by adding a critical connection in another long-distance trail, the Iditarod National Historic Trail.

Use of the KNWR by the Juneau Creek Alternative would reduce the long-term values of the Mystery Creek Wilderness and KNWR, and likely would be considered a symbolic change.

Symbolically, the loss of Wilderness acreage and encroachment of a highway slightly nearer to the remaining Wilderness likely would be perceived as a loss of opportunities for solitude and spiritual renewal. Within KNWR at the location of maximum separation, the new highway centerline would be within 750 feet of the existing highway centerline, and the new highway would merge with the existing, so the change in noise, visual environment, and Wilderness solitude would be an incremental change at the edge of the Wilderness area and not a wholly new change in the heart of the Wilderness unit, but nonetheless, it would be a long-term incremental loss of Wilderness values (see Section 3.2.1.1 for more on Wilderness values and Section 3.27.7.7 for more on incremental cumulative impacts to Wilderness recreation). The Juneau Creek Variant Alternative would avoid any use of Wilderness lands, but would create noise and light source impacts and would be a non-natural, engineered element in the visual landscape immediately outside the KNWR.

Providing a smoothly functioning highway built to current standards would provide another kind of long-term public benefit: these two alternatives would avoid most of the driveways and side roads in the community of Cooper Landing and the recreation destinations along the Kenai River between Cooper Landing and Sportsman’s Landing (MP 47.5–55) and would thereby present a highly efficient public road resource built to current safety standards, a distinct improvement over the existing highway.

**Subsistence.** In addition to the eight factors listed in ANILCA, Department of the Interior regulations at 43 CFR § 36.7 add a ninth ANILCA factor for consideration for the USFWS as it makes its decision. By regulation, the USFWS as a Department of the Interior agency would need to consider this ninth item if the Juneau Creek Alternative were selected. The ninth item is “impacts, if any, on subsistence uses.” An *ANILCA 810 Subsistence Evaluation* (Appendix D of this SEIS) was completed for this project, and subsistence is addressed in Section 3.10.

### **Construction Impacts**

No construction impacts separate from the permanent impacts discussed above are anticipated.

### **Mitigation**

Mitigation proposed in other sections is intended to protect KNWR wildlife movement across the highway and in and out of the KNWR. Mitigation proposed in other sections is intended to minimize impacts to the Resurrection Pass Trail so it may continue to function as a popular and well-used public recreation resource and as a National Recreation Trail, and to enhance another long-distance trail in the Kenai River watershed, the Iditarod National Historic Trail commemorative route.

## **3.2.6 Environmental Consequences (State Plans)**

### **3.2.6.1 No Build Alternative**

#### **Direct and Indirect Impacts**

The No Build Alternative would result in no change regarding State-owned and State-selected lands addressed in the *Kenai Area Plan*. State Management Unit 395, at 1,087 acres, would be fully conveyable to the Borough (minus an existing Federal public road easement); it is anticipated that none of the State land would be retained in State ownership.

The No Build Alternative would result in no change regarding the recommendation of the *Kenai River Comprehensive Management Plan* that new public road construction be separated from the Kenai River (see Section 3.2.1.5). Because no new construction would occur (only replacement of bridges and pavement, plus normal maintenance), the highway would not become “more enjoyable and safer” as called for in the plan. By not removing through-traffic and reducing congestion, improvements called for in the plan (better access points to the river, improved parking areas, new sanitation facilities, and the improvement of trails and fishing areas) would be more difficult to implement because problems associated with the existing highway would remain. Such problems include congested conditions and safety concerns associated with turning movements and access points. See Chapter 1 for more information on the problems in the existing corridor.

### **3.2.6.2 Issues Applicable to the Build Alternatives**

The build alternatives each would affect State lands in different ways. As further described in the sections below, none would impede implementation of State plans.

### **3.2.6.3 Cooper Creek Alternative**

#### **Direct and Indirect Impacts**

The Cooper Creek Alternative would partially meet the recommendation of the *Kenai River Comprehensive Management Plan* that new public road construction be located away from the Kenai River (see Section 3.2.1.5). The Cooper Creek Alternative would be about 14 miles long, and about 3.5 miles of it would be a segment built on a new alignment farther from the river. The rest of the alternative would follow the existing alignment, most of which is near the river. See also Section 3.17, Hazardous Waste Sites and Spills, regarding an assessment of the risk of fuel spills in or near the river. In accord with the plan, the remaining “old” highway likely would be “more enjoyable and safer” by removing through-traffic and reducing congestion.

The Cooper Creek Alternative would bridge over or pass through undeveloped strips of State land proposed as additions to KRSMA at Cooper Creek and near existing MP 52 (Map 3.2-5). It is possible that clearing of trees and construction of a highway and bridge piers would discourage the potential future formal designation of these lands as part of the State park unit. All build alternatives would widen the existing highway into roadside parcels recommended for addition to KRSMA near Kenai Lake (MP 46 area).

Selection of the Cooper Creek Alternative would not affect disposition or development of State Management Unit 395, discussed in the *Kenai Area Plan*. Development (or preservation) of these lands would depend on DNR, USFS, and Borough actions independent of this project, and these scenarios are addressed in Section 3.27, Cumulative Impacts. An analysis discussed in Section 3.27 indicates that the entire 1,087 acres (minus an existing Federal public road easement) would remain available for conveyance to the Borough under this alternative; it is anticipated that the State would retain none of this unit in State ownership.

As shown on Map 4-8 in Chapter 4, the Cooper Creek Alternative would cross Stetson Creek Trail on USFS land. The road would truncate the trail. The State recognizes the trail as an RS 2477 public access right-of-way across adjacent Borough land. The trail would no longer connect from the Cooper Creek Campground area to Stetson Creek, but mitigation measures would ensure continued public access.



### **Construction Impacts**

No construction impacts separate from the permanent impacts discussed above are anticipated.

### **Mitigation**

Public access to the Stetson Creek Trail RS 2477 right-of-way (recognized by the State) would be maintained by constructing a new pullout trailhead uphill of the new highway. See detailed discussion in Chapter 4, in Section 4.5.2 and Section 4.6.6, and see Map 4-8.

#### **3.2.6.4 G South Alternative**

##### **Direct and Indirect Impacts**

The G South Alternative would partially meet the recommendation of the *Kenai River Comprehensive Management Plan* (DNR, ADF&G, KPB 1997) that new public road construction be located away from the Kenai River. The G South Alternative would be about 13.8 miles long, and about 5 miles of it would be a segment built on a new alignment farther from the Kenai River. The rest of the alternative would follow the existing alignment, most of which is near the river. See also Section 3.17, Hazardous Waste Sites and Spills, regarding an assessment of the risk of fuel spills in or near the river. In accord with the plan, the remaining “old” highway would likely be made “more enjoyable and safer” by removing through-traffic and reducing congestion. The plan also recommends no new bridges over the Kenai River, but the G South Alternative would require one new bridge over the Kenai River be constructed.

The G South Alternative would pass through two areas of undeveloped State land proposed as additions to KRSMA in the area between Bean Creek and Juneau Creek, and near the new bridge over the Kenai River (Map 3.2-5). It is possible that clearing of trees and construction of a highway, bridges, a temporary bridge access road to Juneau Creek, and a bridge construction staging area on these lands would discourage the potential future formal designation of these lands as part of the State park unit. Further discussion appears in the Park and Recreation Resources section (3.8) and Wildlife section (3.22). All build alternatives would widen the existing highway into roadside parcels recommended for addition to KRSMA near Kenai Lake (MP 46 area).

Selection of the G South Alternative would not affect future development of State Management Unit 395. Development (or preservation) of these lands would depend on DNR, USFS, and Borough actions independent of this project, and these scenarios are addressed under Section 3.27, Cumulative Impacts. An analysis discussed in Section 3.27 indicates that the entire 1,087 acres (minus only a Federal public road easement) would remain available for conveyance to the Borough under this alternative; it is anticipated that the State would retain none of this unit in State ownership.

As shown on Map 4-8 in Chapter 4, the G South Alternative would cross Bean Creek Trail on State land. The road would truncate the trail near its southern end. The State recognizes the trail as an RS 2477 public access right-of-way across its own lands. Access to the trail would be mitigated.

### **Construction Impacts**

No construction impacts separate from the permanent impacts discussed above are anticipated.

## **Mitigation**

Public access to the Bean Creek Trail RS 2477 right-of-way (recognized by the State) would be maintained by constructing a grade separated underpass for a spur of the trail and a new trailhead uphill of the new highway. See detailed discussion in Chapter 4, Sections 4.5.3 and 4.6.5, and see Map 4-6.

### **3.2.6.5 Juneau Creek and Juneau Creek Variant Alternatives**

#### **Direct and Indirect Impacts**

The Juneau Creek and Juneau Creek Variant alternatives would partially meet the recommendation from the *Kenai River Comprehensive Management Plan* that new public road construction be located away from the Kenai River. The Juneau Creek Alternative would be about 14.5 miles long, and about 10 miles of it would be a segment built on a new alignment farther from the Kenai River. The Juneau Creek Variant Alternative would be about 14.1 miles long, and about 9 miles of it would be a segment built on a new alignment farther from the Kenai River. The rest of each alternative would follow the existing alignment, most of which is near the river. See also Section 3.17, Hazardous Waste Sites and Spills, regarding an assessment of the risk of fuel spills in or near the river. In accord with the plan, the remaining “old” highway would likely be made “more enjoyable and safer” by removing through-traffic and reducing congestion.

These alternatives would clip a corner of undeveloped State land proposed as an addition to KRSMA near Bean Creek (Map 3.2-5). Because this impact is on the edge of the unit, the presence of the new highway would be unlikely to change the potential future formal designation of these lands as part of the State park unit. All build alternatives would widen the existing highway into roadside parcels recommended for addition to KRSMA near Kenai Lake (MP 46 area).

Selection of either of the Juneau Creek alternatives would affect future development of State Management Unit 395, because the State would likely retain about 124 acres (Juneau Creek Alternative) or 127 acres (Juneau Creek Variant) for the highway right-of-way and for a 100-foot highway buffer on each side, as described in the *Kenai Area Plan*. Development (or preservation) of Unit 395 would depend on DNR, USFS, and Borough actions independent of this project, and these scenarios are addressed under Section 3.27, Cumulative Impacts. An analysis discussed in Section 3.27 indicates that about 963 acres (Juneau Creek Alternative) or 960 acres (Juneau Creek Variant) of the 1,087-acre whole would remain available for conveyance to the Borough under these alternatives. An existing USFS public road easement through the property also would reduce the conveyed acreage slightly.

As shown on Map 4-8 in Chapter 4, the two Juneau Creek alternatives would cross Bean Creek Trail on USFS land. The road would truncate the trail on its historic route. The State recognizes the trail as an RS 2477 public access right-of-way. Access for the trail would be mitigated.

#### **Construction Impacts**

No construction impacts separate from the permanent impacts discussed above are anticipated.

## Mitigation

Public access to the Bean Creek Trail (an RS 2477 right-of-way recognized by the State) would be maintained by re-routing a segment of the trail to the west of its historic alignment so that it would pass under the eastern end of the Juneau Creek Bridge. See detailed discussion in Chapter 4, Sections 4.5.4 and 4.6.5, and see Map 4-10.

### 3.2.7 *Environmental Consequences (Borough and Other Pertinent Plans)*

The Borough-adopted plans are addressed under the headings for each individual alternative, below. The “other pertinent plans” are:

- The *North and South Sterling Byways Corridor Partnership Plan* recommended closure of informal and unsafe pullouts and construction or upgrade of others.
- The *Kenai Mountains - Turnagain Arm National Heritage Area Management Plan* recommended interpretive signs for historic properties along the Sterling Highway.

The project alternatives would address pullout concerns and interpretive signs in these plans to the extent described below for the No Build Alternative and Issues Applicable to the Build Alternatives.

#### 3.2.7.1 No Build Alternative

##### Direct and Indirect Impacts

The Kenai Peninsula Borough’s selection of State Unit 395 has been approved by DNR, and Borough plans to create rural residential lots for private ownership within this 1,087-acre area would be unaffected by the No Build Alternative. See further discussion in Section 3.27, Cumulative Impacts.

The No Build Alternative would not close, modify, or create any pullouts or otherwise address concerns in the *Corridor Partnership Plan*. Approximately 24 existing pullouts and parking areas would continue to exist within the highway right-of-way in the project area. No interpretive material would be provided along the highway.

#### 3.2.7.2 Issues Applicable to the Build Alternatives

The project would partially address pullout issues raised in the *Corridor Partnership Plan*. Each of the build alternatives would provide one or two new pullouts or parking areas. The Fuller Lakes Trail pullout would remain under all alternatives, and pullouts located along the “Old Sterling Highway” segment left by each alternative would remain unchanged. Other informal pullouts would not be reconstructed. See “Pullouts” in the Section 3.6, Transportation, for detail.

By providing interpretive material, the project would help meet the goals of the Kenai Mountains-Turnagain Arm National Heritage Area plan. Each of the build alternatives conceptually includes as mitigation for cultural resource impacts some interpretive signs making the Squalantnu Archaeological District and historic trails better known to the general public. These signs most likely would be located at trailheads and campgrounds in the project area. See Section 4.6 for greater discussion of this mitigation.

### **3.2.7.3 Cooper Creek Alternative**

#### **Direct and Indirect Impacts**

The *Kenai Peninsula Borough Comprehensive Plan* (2005b) and its incorporated *Cooper Landing Land Use Classification Plan* may require amendment because the plan was developed based on the 1994 Draft EIS and a 1995 announcement by the DOT&PF Commissioner of the State’s preference at that time for the Juneau Creek Alternative (the Cooper Landing plan created a preservation buffer along that alignment). According to Borough staff, if the Cooper Creek Alternative were constructed, the Borough likely would reconsider classifying land along the new alignment for a “preservation” buffer and likely would consider relinquishing the buffer along portions of the unused Juneau Creek Alignment, requiring a plan amendment (DOT&PF 2012d).

The Borough’s selection of State Management Unit 395 has been approved by DNR, and Borough plans to create rural residential lots for private ownership within this 1,087-acre area would be unaffected by the Cooper Creek Alternative. See further discussion in Section 3.27, Cumulative Impacts.

The alternative is consistent with the intent of the *Cooper Landing Land Use Classification Plan*, because it would remove through-traffic from a large part of the core of the community (west of Snug Harbor Road/Cooper Landing Bridge), and less congestion may improve the pedestrian experience and support the community’s *Walkable Community Project* plan, which was incorporated into the *Kenai Peninsula Borough Comprehensive Plan* by the Borough Assembly (Ordinance 2010-13). The “old” highway segments would not, however, be improved to include wider shoulders or a pedestrian path. The traffic, while considerably less in volume, would still include large RVs and vehicles with boat trailers, allowing no additional room for pedestrians or bikers using the highway to connect the community. This Sterling Highway MP 45–60 Project is not designed to address specific projects proposed in the *Walkable Community Project* plan; however, it would accomplish some of them at least in part:

- For the segment where the Cooper Creek Alternative would be built on the existing alignment in Cooper Landing (north of Snug Harbor Road/Cooper Landing Bridge), the project would create distinct driveways instead of broad pull-off areas at businesses, creating more predictable and safer vehicle movements.
- Signs would be erected at approaches to the intersections of the Cooper Creek Alternative and the “old” highway to indicate how to get to the community of Cooper Landing, its businesses, and Cooper Creek Campground. These would, in part, serve to create a “gateway” feel to the area.
- The Cooper Creek Alternative would add shoulders and straighten curves over about 11.5 miles of the existing highway.
- The replaced Cooper Landing Bridge would include a pedestrian walkway that would be an improvement over the current pedestrian walkway.
- Turning lanes would be added in the portion of Cooper Landing where the highway would be improved (north of Cooper Landing Bridge).

These features are consistent with projects proposed in *Walkable Community Project* plan.

### **Construction Impacts**

No construction impacts separate from the permanent impacts discussed above are anticipated.

### **Mitigation**

No mitigation is proposed.

#### **3.2.7.4 G South Alternative**

##### **Direct and Indirect Impacts**

The *Kenai Peninsula Borough Comprehensive Plan* (2005b) and its incorporated *Cooper Landing Land Use Classification Plan* may require amendment because the plan was developed based on the 1994 Draft EIS and a 1995 announcement by the DOT&PF Commissioner of the State's preference at that time for the Juneau Creek Alternative (the plan created a preservation buffer along that alignment). According to Borough staff, if the G South Alternative were constructed, the Borough likely would reconsider classifying land along the new alignment for a "preservation" buffer and likely would consider relinquishing the buffer along portions of the unused Juneau Creek Alternative, requiring a plan amendment (DOT&PF 2012d).

The Borough's selection of State Management Unit 395 has been approved by DNR, and Borough plans to create rural residential lots for private ownership within this 1,087-acre area would be unaffected by the G South Alternative. See further discussion in Section 3.27, Cumulative Impacts.

By removing through-traffic from the core of the Cooper Landing community, this alternative would reduce congestion, which may improve the pedestrian experience and support the community's *Walkable Community Project* plan, which was incorporated into the *Kenai Peninsula Borough Comprehensive Plan* by the Borough Assembly (Ordinance 2010-13). The "old" highway segments would not, however, be improved to include wider shoulders or a pedestrian path. The traffic, while considerably less in volume, would still include large RVs and vehicles with boat trailers, allowing no additional room for pedestrians or bikers using the highway to connect the community. This project is not designed to address specific projects proposed in the *Walkable Community Project* plan; however, it would accomplish some of them at least in part:

- Signs would be erected at approaches to the intersections of the G South Alternative and the "old" highway to indicate how to get to the community of Cooper Landing, its businesses, and Cooper Creek Campground. These would, in part, serve to create a "gateway" feel to the area.
- The G South Alternative would add shoulders and straighten curves over about 9.8 miles of the existing highway.

These features are consistent with projects proposed in the *Walkable Community Project* plan.

### **Construction Impacts**

No construction impacts separate from the permanent impacts discussed above are anticipated.

### **Mitigation**

No mitigation is proposed.

### **3.2.7.5 Juneau Creek and Juneau Creek Variant Alternatives**

#### **Direct and Indirect Impacts**

The Juneau Creek and Juneau Creek Variant alternatives would be consistent with the *Kenai Peninsula Borough Comprehensive Plan* (2005b) and its incorporated *Cooper Landing Land Use Classification Plan*, because these planning documents assumed the Juneau Creek Alternative was going to be the route selected. Moreover, the Cooper Landing plan specifically states “NO access to or from the new alignment other than the departure from the existing road at either end of the bypass. The NO ACCESS issue is not a matter taken lightly by the community” (CLAPC (1996); emphasis in original text). Developed public access to lands along the new alignment would be limited to construction of a new trailhead serving Resurrection Pass Trail and a pullout east of the proposed Juneau Creek Bridge (see Chapter 4). The preservation buffer shown in the Borough plans along the assumed new highway alignment may need to be adjusted to match the actual alignment once it undergoes final design.

The Borough’s selection of State Management Unit 395 has been approved by DNR. Borough plans to create rural residential lots for private ownership within this 1,087-acre area would be affected by selection of either of the Juneau Creek alternatives. If one of these alternatives were selected, the State likely would retain 124 acres (Juneau Creek Alternative) or 127 acres (Juneau Creek Variant) in State ownership for the highway right-of-way across Unit 395 and for a highway buffer 100 feet wide, as called for in the *Kenai Area Plan*. See further discussion in Section 3.27, Cumulative Impacts. The analysis discussed in Section 3.27 indicates that the potential for rural residential lots would be reduced from an estimated 146 lots to 126 lots (Juneau Creek Alternative) or 128 lots (Juneau Creek Variant)—a reduction of about 12 percent. The reduction of acreage likely would mean that the Borough would qualify to take ownership of other State lands elsewhere. Borough plans for settlement are made to attract and provide for the Borough population and to add to its tax base. The reduction in development potential would affect Borough settlement patterns and could change the overall taxable land base.

By removing through-traffic from the core of the Cooper Landing community, these alternatives would reduce congestion, which may improve the pedestrian experience and support the community’s Walkable Community Project plan, which was incorporated into the *Kenai Peninsula Borough Comprehensive Plan* by the Borough Assembly (Ordinance 2010-13). The “old” highway segments would not, however, be improved to include wider shoulders or a pedestrian path. The traffic, while considerably less in volume, would still include large RVs and vehicles with boat trailers, allowing no additional room for pedestrians or bikers using the highway to connect the community. This project is not designed to address specific projects proposed in the *Walkable Community Project* plan; however, it would accomplish some of them at least in part:

- Signs would be erected at approaches to the intersections of the Juneau Creek and Juneau Creek Variant alternatives and the “old” highway to indicate how to get to the community of Cooper Landing and its businesses, the Cooper Creek and Russian River campgrounds, boat launches, and other recreation amenities. These signs would, in part, serve to create a “gateway” feel to the area.

- The Juneau Creek and Juneau Creek Variant alternatives would add shoulders and straighten curves over about 5.5 miles and 6.3 miles of the existing highway, respectively.

These features are consistent with projects proposed in the *Walkable Community Project Plan*.

### **Construction Impacts**

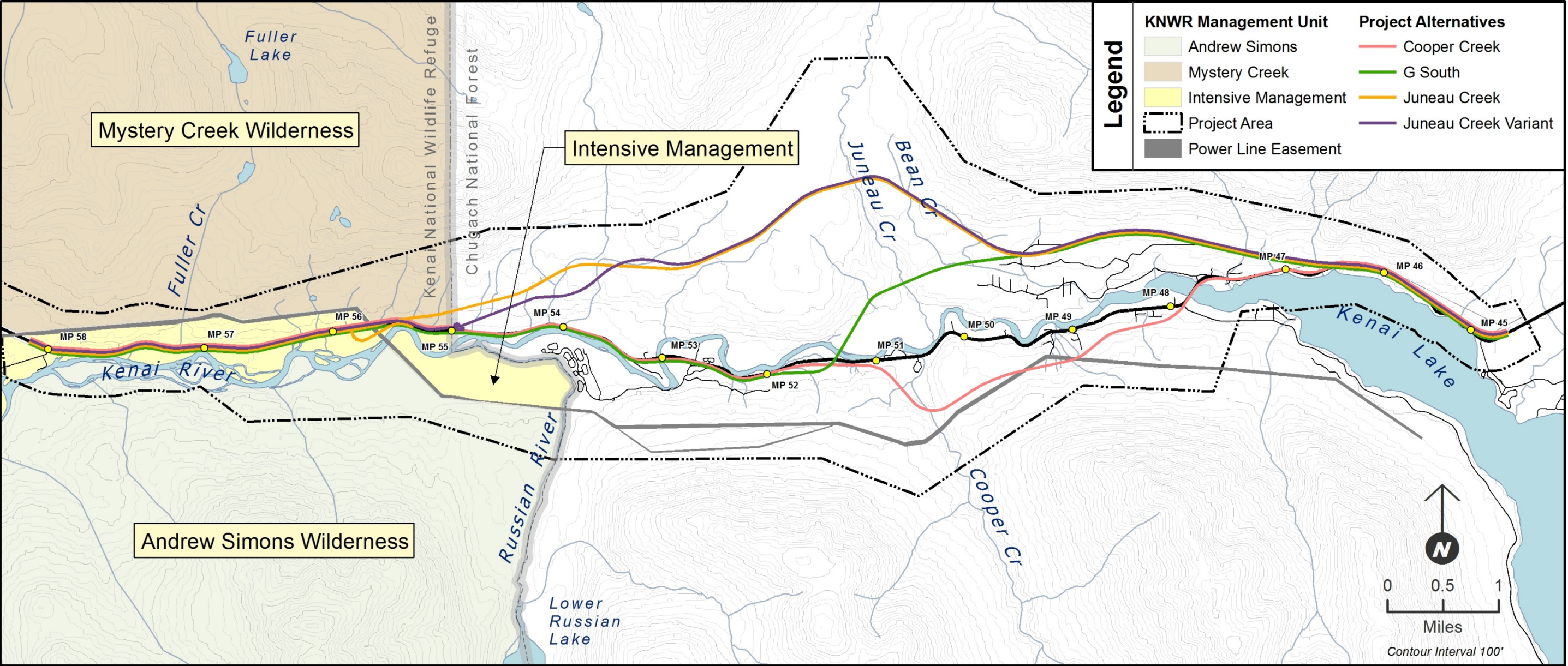
No construction impacts separate from the permanent impacts discussed above are anticipated.

### **Mitigation**

No mitigation is proposed.



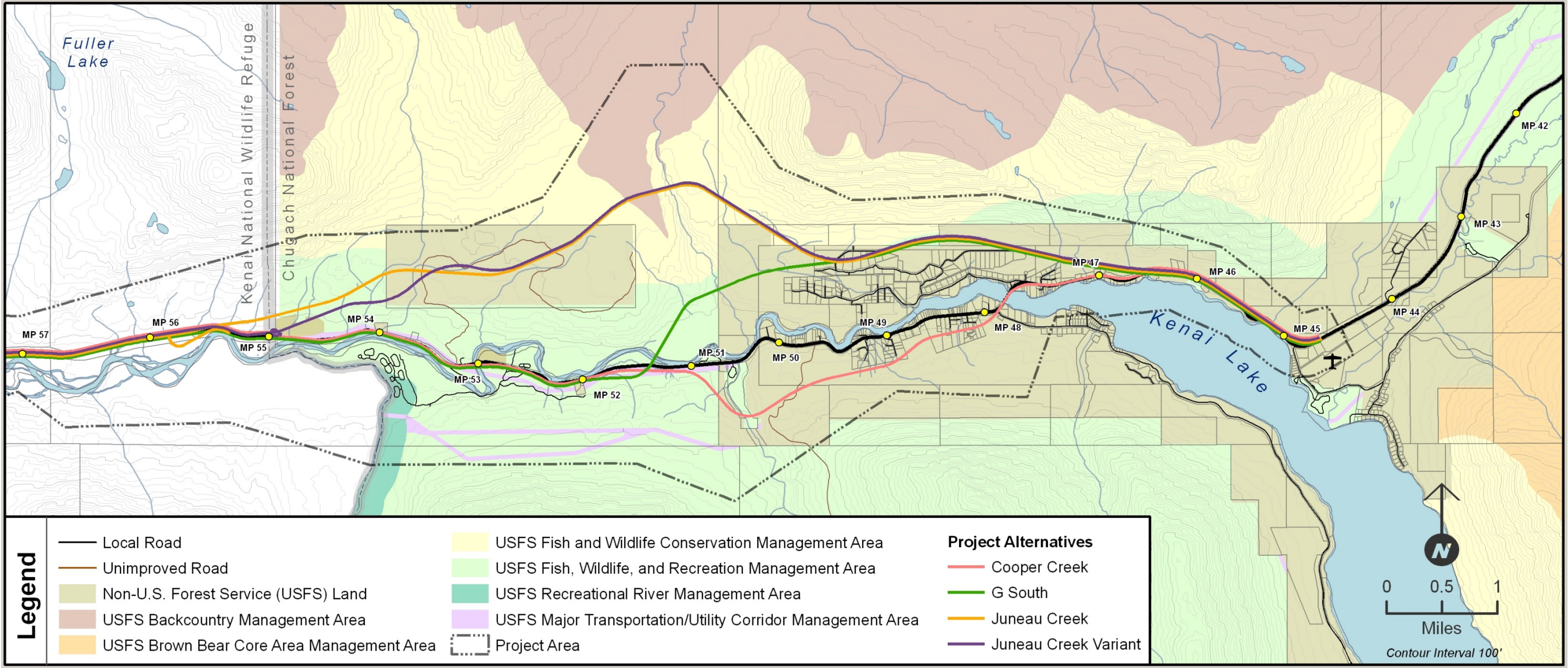
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Map 3.2-1. Kenai National Wildlife Refuge management designations

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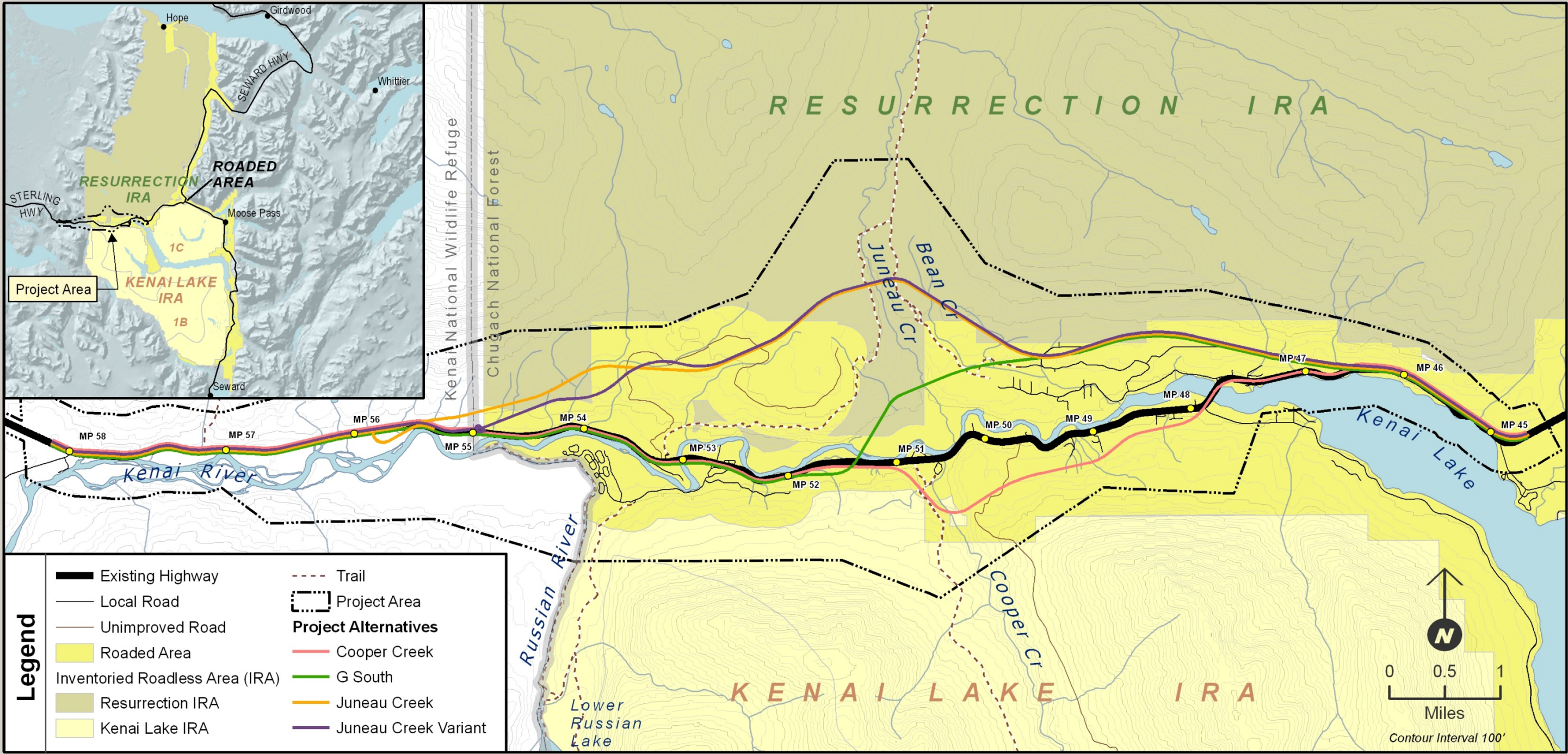




Map 3.2-2. U.S. Forest Service land prescriptions

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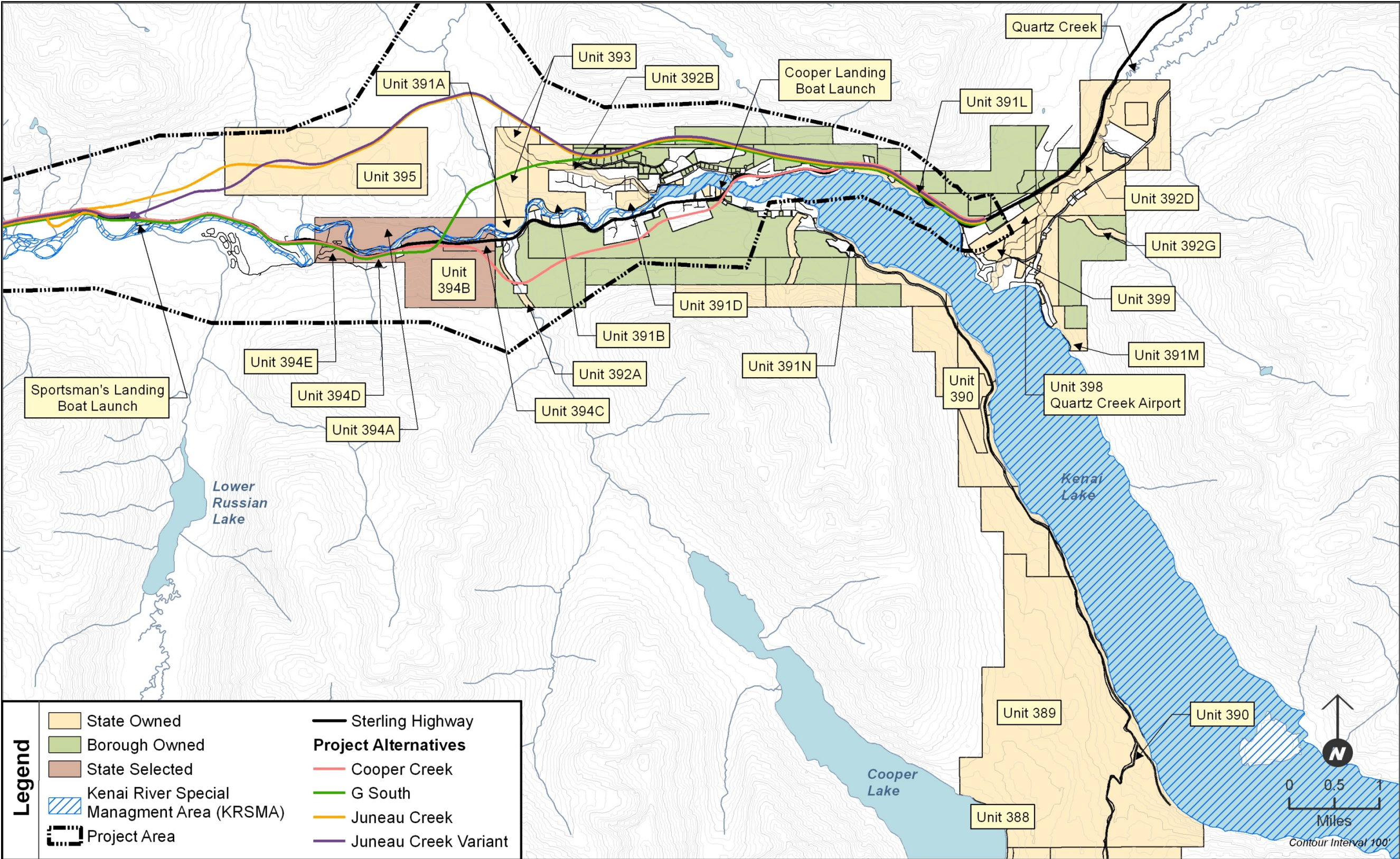






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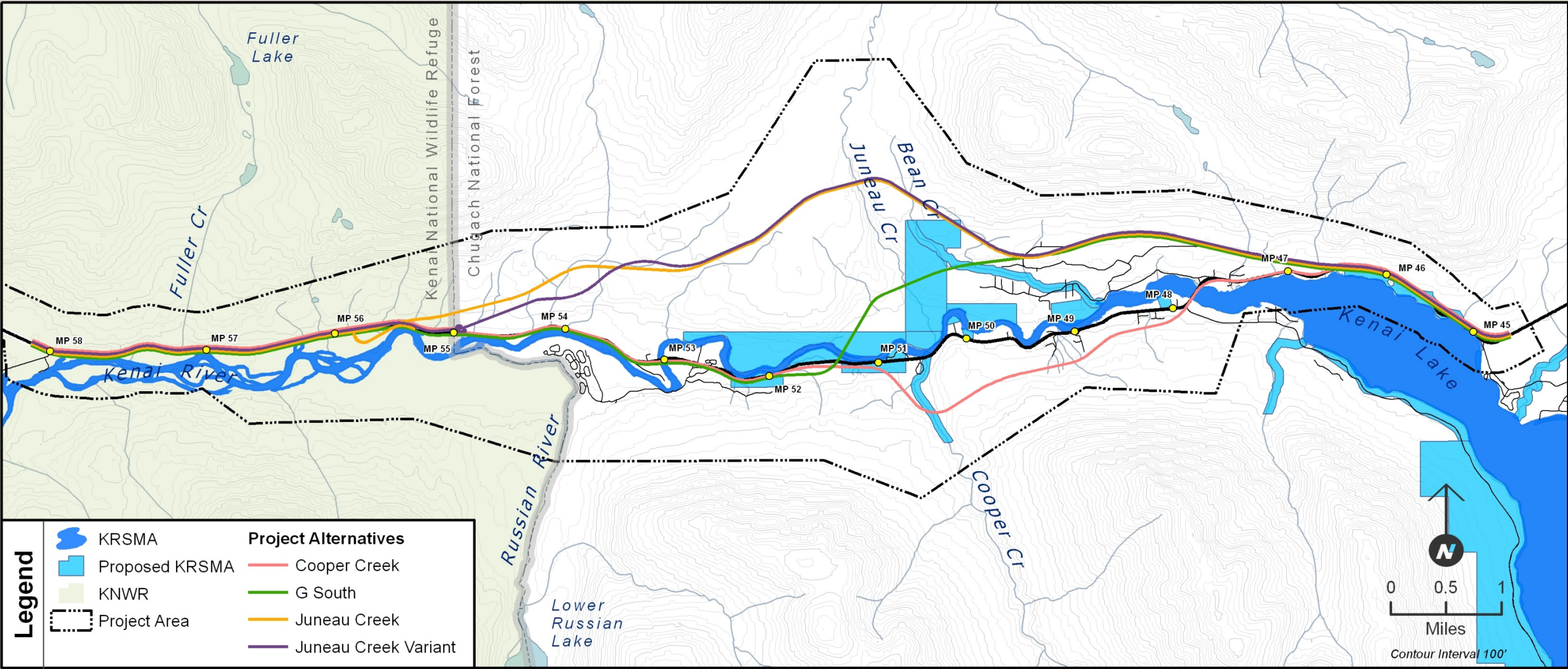




Map 3.2-4. Kenai Area Plan management units

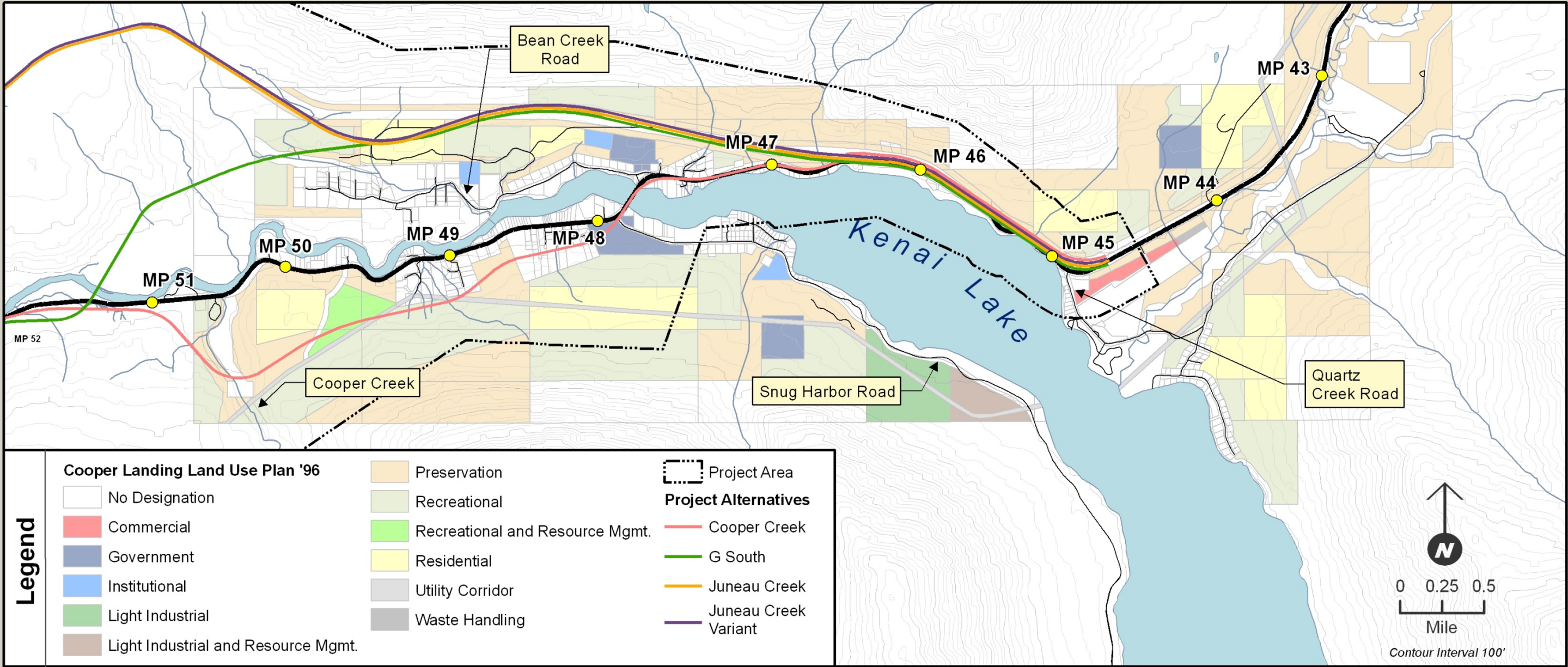


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Map 3.2-6. Cooper Landing planning areas

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## 3.3 Social Environment

### 3.3.1 Affected Environment

This section describes conditions and trends related to the populations of the Kenai Peninsula Borough (Borough) and Cooper Landing, including changes in the amount and location of population, racial composition, age distribution, household characteristics, and income. This section also describes community character and community and public facilities. Information on travel patterns, accessibility, and traffic safety can be found in Section 3.6, Transportation. Information on housing is described in Section 3.4, Housing and Relocation.

#### 3.3.1.1 Population and Social Groups

##### Population

The Borough covers 25,600 square miles, of which 15,700 square miles are land, and averages 2.2 persons per square mile (KPB 2010). The population of the Borough grew 36 percent, increasing from 40,802 to 55,400 people, between 1990 and 2010, an average annual rate of 1.8 percent. Population has generally increased since 1990 to its current peak (ADOLWD 2010). A large portion of the population is located in and around the towns of Homer and Seward and the communities of Soldotna, Cooper Landing, and Sterling.

The population of the unincorporated community of Cooper Landing in 2010 was 289 and peaked in 2001 at 391. The population declined slightly in 2002 and 2003 but was relatively constant between 2003 and 2009 (ADOLWD 2010).

##### Minority and Low-Income Populations

According to 2010 U.S. Census data, 4.5 percent of the residents of Cooper Landing are considered part of a minority group, fewer than the average for the Borough and the State of Alaska at 17.2 and 35.9 percent, respectively (Table 3.3-1). Based on the 2010 Census information presented in the 2010 Census Interaction Population Map, there are no clusters of minority residents within the project area or adjacent to any particular alternative. The number of minority residents, by census block, ranges from zero to three. The Census Bureau indicates that the race category identified as American Indian and Alaska Native (alone) comprises most of the Borough and the Cooper Landing minority population (7.4 and 1.4 percent, respectively, compared to the statewide average of 14.8 percent).

**Table 3.3-1. Population in Alaska, the Kenai Peninsula Borough, and Cooper Landing**

Area	Total population	White	Minority <sup>a</sup>	Percent (%) non-white
Alaska	710,231	455,320	254,911	35.9
Borough	55,400	45,879	9,521	17.2
Cooper Landing	289	276	13	4.5

<sup>a</sup> A Total minority is the sum total of the following populations: Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, Two or More Races, and White Hispanic.

Source: USCB (2010a)

Median household income data are based on 2008 through 2012 American Community Survey<sup>1</sup> (ACS) data (USCB 2011). Household income is generally used as the basis for determining poverty. According to the U.S. Department of Health and Human Services (DHHS), poverty is defined by comparing the total family income with the poverty threshold. The poverty threshold for Alaska is \$19,380 for a household of two (Table 3.3-2).

**Table 3.3-2. U.S. Department of Health and Human Services 2013 poverty guidelines**

<b>Size of family/ household unit</b>	<b>48 contiguous states and D.C. (\$)</b>	<b>Alaska (\$)</b>	<b>Hawaii (\$)</b>
1	11,490	14,350	13,230
2	15,510	19,380	17,850
3	19,530	24,410	22,470
4	23,550	29,440	27,090
5	27,570	34,470	31,710
6	31,590	39,500	36,330
7	35,610	44,530	40,950
8	39,630	49,560	45,570
<i>For each additional person, add</i>	<i>4,020</i>	<i>5,030</i>	<i>4,620</i>

Source: DHHS (2013).

2010 Census data indicated there were 161 occupied households in Cooper Landing (see Section 3.4, Housing and Relocation). The median household income in 2012 for Cooper Landing was \$119,306, approximately \$100,000 above the 2013 poverty threshold for the state of Alaska for a household of two. This income level indicates that the project area most likely does not have a large low-income population, based on the DHHS poverty guidelines.

ACS 2008 through 2012 data reveal that approximately 10 people, or 3.3 percent of the population, live below the poverty level in the community of Cooper Landing, as shown in Table 3.3-3. Percentages of population below the poverty level for the Borough and the state of Alaska are higher, at 9.1 and 9.6 percent, respectively. FHWA and DOT&PF are unaware of any concentrations of low-income residents within the project area or adjacent to any particular alternative. The available data set is too small to analyze.

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<sup>1</sup> The ACS is an ongoing survey sent to approximately 3 million addresses each year. The data collected by the ACS replace the long form of the census to obtain demographic, housing, social, and economic information. Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see the American Community Survey Data & Documentation Web site (USCB 2011)). The effect of nonsampling error is not represented in these tables.



**Table 3.3-3. Poverty rates in Alaska, Kenai Peninsula Borough, and Cooper Landing**

Area	Population for whom poverty status is determined <sup>a</sup>	Median household income for total population in 2012 (\$) <sup>a</sup>	Total population with income in the past 12 months below poverty level <sup>a</sup>	Population with income in the past 12 months below poverty level (%)
Alaska	694,795	69,917	66,631	9.6
Borough	54,055	59,421	4,930	9.1
Cooper Landing	302	119,306	10	3.3

<sup>a</sup> USCB (2013).

2010 U.S. Census data confirm the population of Cooper Landing is older than the state average. In Cooper Landing, the median age is 55.6 years old, 29.4 percent of the population is 65 years and older, and 8.7 percent is less than 20 years old. For the state of Alaska, the median age is 33.8 years old, 7.8 percent of the statewide population is 65 years and older, and 29.3 percent is less than 20 years old (Table 3.3-4).

**Table 3.3-4. Population breakdown by age for Alaska, Kenai Peninsula Borough, and Cooper Landing**

	Alaska	Percent (%) of total state population	Kenai Peninsula Borough	Percent (%) of total Borough population	Cooper Landing	Percent (%) of total Cooper Landing population
<b>Total population</b>	710,231	—	55,400	—	289	—
Under 5 years	53,996	7.6	3,464	6.3	10	3.5
5 to 9 years	50,887	7.2	3,434	6.2	7	2.4
10 to 14 years	50,816	7.2	3,762	6.8	6	2.1
15 to 19 years	52,141	7.3	3,959	7.1	2	0.7
20 to 24 years	54,419	7.7	3,066	5.5	6	2.1
25 to 34 years	103,125	14.5	6,290	11.4	28	9.7
35 to 44 years	92,974	13.1	6,855	12.4	24	8.3
45 to 54 years	111,026	15.6	9,527	17.2	59	20.4
55 to 65 years	85,909	12.1	8,767	15.8	62	21.5
65 to 74 years	35,350	5.0	4,064	7.3	50	17.3
75 to 84 years	14,877	2.1	1,679	3.0	27	9.3
85 years and over	4,711	0.7	533	1.0	8	2.8
Median age (years)	33.8	—	40.8	—	55.6	—

Source: USCB (2010a).

### **3.3.1.2 Community Character**

Cooper Landing is an unincorporated community located on the Sterling Highway about 100 miles south of Anchorage and about 50 miles northwest of Seward and east of Soldotna at the west end of Kenai Lake in the Chugach Mountains. The highway and settlement area lie in the narrow east-west corridor of the Kenai River Valley, where sport fishing is a popular recreational activity and major source of area employment and income. The Cooper Landing Community Club, formed in 1949, is extensively involved in local development issues and is an advocate for residents' concerns. Commercial activity consists of small businesses located along the existing Sterling Highway corridor. Residential subdivisions in the area have a total of 395 housing units (USCB 2010a). A non-profit corporation, Cooper Landing Senior Citizens Corporation, Inc., has developed Eagles View and Ravens View, two clusters of senior housing located 2.8 miles down Snug Harbor Road (see Map 3.3-1). According to the organization's web site, there are a total of 12 apartments at the site.

Overall, Cooper Landing is an aging community. The median age increased from 45.7 in 2000 to 55.6 in 2010. The number of children under 19 has dropped in the same time frame, from 76 to 25 children. School enrollment has also decreased dramatically. In fall 2010, the Cooper Landing School had 10 students, compared to 34 in 2000 (ADEED 2011). Enrollment for the 2013–2014 school year was 17 (KPB School District 2013). Should the enrollment drop below 10 students, the school would not receive full funding from the State (ADEED 2012). If the school did not receive full funding from the State, its future would be uncertain, and this could lead to the closure of the school.

Between 2000 and 2010, home ownership rates continued to be high, with almost three times as many home owners as renters. In 2010, more households lived in Cooper Landing on a year-round basis than in 2000. However, the rate of seasonally occupied housing remains similar with approximately half the housing units being seasonally occupied. This is to be expected, as many of the local businesses are associated with tourism, which is substantially higher during the summer than the winter, and many of the homes are recreational dwellings (second homes).

The Sterling Highway is one of the community's defining features and shapes its character. The community formed around the highway, with residential housing, commercial development, and community and public services located on the north and south of the highway. While it is likely the road initially was a unifying feature for the community, increasing traffic, particularly in the summer, makes it difficult for local residents to turn onto and off of the highway, and increases travel times between local destinations. Most commercial development and community facilities are oriented along the highway and are not easily accessed without a vehicle, requiring residents to drive on the highway (LDN 2010a). The *Cooper Landing Walkable Community Project* plan notes that "as most travel is by vehicle, the ability for casual contact among residents is limited" (LDN 2010a). Through such plans, the community has advocated for increased pedestrian amenities and traffic calming.

### **3.3.1.3 Community and Public Facilities**

Cooper Landing, an unincorporated community with a population of 289, does not provide many of its own local services because of its limited population base. Residents of Cooper Landing go to the neighboring community of Soldotna or other nearby communities for many of their supplies and necessary services. Table 3.3-5 lists service types and locations available in the vicinity of Cooper Landing. Map 3.3-1 identifies these locations. Residents in Cooper Landing

usually drive rather than walk or bike because of heavy traffic on the highway and inadequate pedestrian facilities (LDN 2010a).

**Table 3.3-5. Community facilities and services available in Cooper Landing vicinity**

<b>Facility</b>	<b>Services available</b>
Health Care Facilities	<ul style="list-style-type: none"> <li>• Cooper Landing Medical Clinic provides services on Tuesdays from 9am to 3:30pm (operated by Peninsula Community Health Services)</li> <li>• Alternative care options (each approximately 47 miles from Cooper Landing): <ul style="list-style-type: none"> <li>- Central Peninsula General Hospital in Soldotna</li> <li>- Providence Seward Medical Center</li> </ul> </li> </ul>
Police	<ul style="list-style-type: none"> <li>• No local police services</li> <li>• Alaska State Troopers patrol the area and have a post on Quartz Creek Road</li> </ul>
Fire/Rescue	<ul style="list-style-type: none"> <li>• Cooper Landing Volunteer Fire Department (located on Snug Harbor Road) <ul style="list-style-type: none"> <li>- 11 volunteer firefighters and no salaried staff</li> </ul> </li> <li>• 911 telephone service</li> <li>• Cooper Landing Volunteer Ambulance – an independent, locally based organization located at the Cooper Landing Volunteer Fire Department on Snug Harbor Road</li> </ul>
Libraries	<ul style="list-style-type: none"> <li>• Cooper Landing public library located on Bean Creek Road</li> <li>• Cooper Landing School library located on Bean Creek Road</li> </ul>
Schools	<ul style="list-style-type: none"> <li>• Borough School District serves kindergarten through 12th grade at Cooper Landing School located on Bean Creek Road <ul style="list-style-type: none"> <li>- 17 students enrolled for the 2013–2014 school year</li> </ul> </li> </ul>
Community	<ul style="list-style-type: none"> <li>• Cooper Landing Community Center on Bean Creek Road</li> <li>• Historical Society and Museum located at Milepost (MP) 48.7</li> <li>• Cooper Landing Visitor's Center Log Cabin located at MP 47.5</li> <li>• KNWR Visitor Contact Station located at MP 60 (open summer months only)</li> <li>• Senior Housing located on Snug Harbor Road</li> <li>• Post Office located on Snug Harbor Road</li> </ul>

Source: Stewart, personal communication (2005), ADCCED (2011), KPB School District (2013).

### **3.3.1.4 Environmental Justice**

Executive Order 12898 (29 FR 7629) and the Federal Highway Administration (FHWA) order titled *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (1998) require FHWA to incorporate consideration of environmental justice into the National Environmental Policy Act evaluation process. Demographic analysis indicates there are no low-income populations in the project area, but there are minority populations in the project area, including Alaska Natives (see Table 3.3-1).

### **3.3.2 Environmental Consequences**

This section discusses the effects of the Sterling Highway Milepost (MP) 45–60 Project alternatives on the social environment, including changes to populations and social groups, community character, and community and public facilities. It also discusses populations that could be disproportionately affected by the project because of their minority or low-income status (environmental justice). Information on impacts to travel patterns and accessibility and highway and traffic safety can be found in Section 3.6. Park and recreation impacts are discussed in Section 3.8. Economic impacts are discussed in Section 3.5.

#### **3.3.2.1 No Build Alternative**

##### **Direct and Indirect Impacts**

**Effects on Population and Social Groups.** The No Build Alternative would not directly affect population and social groups (elderly, handicapped, non-drivers, minority, and/or ethnic groups) located within the project area. The local population and demographics would remain generally unchanged from current conditions, and current trends would continue and be unaffected by the No Build Alternative. Similarly, social groups would continue to function as under current conditions, with no change in general characteristics anticipated to result from the alternative. The No Build Alternative would not directly affect any known minority and low-income populations located within the project area. Therefore, there would be no effect on environmental justice populations.

**Effects on Community Character.** The No Build Alternative would continue to affect the opportunity for casual contact among residents. As traffic continued to grow, roadway congestion would increase, particularly in summer. Increased roadway congestion would create more of a barrier for pedestrian and bicyclist traffic, thus limiting social interaction.

It would be increasingly difficult for residents and tourists to turn onto and off the highway. This would decrease their ability to access locations of businesses and services. See Section 3.5 for discussion related to the local economy.

**Community and Public Facilities.** Under the No Build Alternative, there would be no change to community and public facilities relative to existing conditions during the winter. During the summer, traffic on the Sterling Highway is expected to increase, making congestion worse. Congested traffic would increase the response times of emergency service providers. Also in the summer, increased congestion would make it incrementally more difficult for people to travel to and between community and public facilities in the area. It would take longer, be incrementally less safe, and be less convenient for people to access community and public facilities.

**Environmental Justice.** Based on demographic analysis and outreach, the No Build Alternative would cause no disproportionately high or adverse environmental effects on human health or the environment for the minority populations identified in the project area. That is, any adverse effects suffered by minority and low-income populations would be no more severe or greater in magnitude than those suffered by the non-minority population or non-low-income population. Therefore, the No Build Alternative would not have an adverse environmental justice impact.

### **3.3.2.2 Issues Applicable to the Build Alternatives**

#### **Direct and Indirect Impacts**

**Effect on Population and Social Groups.** Little permanent effect to the Cooper Landing community population is expected under any of the build alternatives. Some discussion appears under each alternative in the sections below.

**Effects on Community Character.** All of the build alternatives have the potential to change local traffic patterns by moving the faster through-traffic away from the central business area (approximately MP 48 to 50). Because the main highway would bypass most or all of the community of Cooper Landing, about 70 percent of traffic would be diverted away from the center of the community. Dust, noise, and visual effects of steady traffic in summer would be decreased. There would be a decrease in congestion, which may improve the travel experience for visitors, pedestrians, and residents, as well as local businesses that use the existing road in their daily business. Removing the through-traffic could make it easier for local residents to travel to and from community facilities and between neighborhoods and developed areas, which could improve community function and character within Cooper Landing and increase positive social interactions and enhance the small town atmosphere. Improving the small town atmosphere could generally enhance Cooper Landing's reputation as a good place to visit. The "old" highway segments would not, however, be improved to include wider shoulders or a pedestrian path. The traffic, while considerably less in volume, would still include large RVs and vehicles with boat trailers, allowing no additional room for pedestrians or bikers using the highway.

All build alternatives would directly affect the businesses of Cooper Landing because each alternative includes a segment built on a new alignment that would be routed around most (i.e., Cooper Creek Alternative) or all (i.e., G South, Juneau Creek, and Juneau Creek Variant alternatives) of the business district. Discussion of the local economy appears in Section 3.5 and indicates that as a result of the build alternatives, some businesses may need to change to remain profitable, and it is possible some would go out of business. Such changes could cause a shift in the mix of businesses that contribute to Cooper Landing's existing character. However, Cooper Landing would remain a destination for fishing and other recreation, so support businesses related to those activities would likely not change. Therefore, the mix of business types that gives Cooper Landing its current character would not be dramatically affected by the build alternatives, although some change is likely.

**Community and Public Facilities.** None of the build alternatives would have adverse impacts on community and public facilities, including schools, libraries, health care facilities, fire stations, and the provision of public safety services in the Borough. With no anticipated changes in population trends in the project area, there would be minimal additional demand for community and public facilities or services compared with the No Build Alternative.

All build alternatives would alleviate emergency response vehicle delays by reducing traffic congestion and by providing an alternate route in a portion of the project area if an accident were to close one of the roads. By improving safety features (e.g., shoulders and clear zones) along the build alternatives, the accident rate is expected to decrease. Therefore, the demand for emergency services for vehicle-related crashes would not increase in proportion to the projected increase in traffic. With a highway designed for highway speeds and with less congestion than presently occurs, traffic would move at faster average speeds, which may result in an increase in

crash severity. All build alternatives would expand the area for emergency service providers because they would have to provide services on the build alternative as well as the “old” highway, but the total amount of traffic is expected to be the same as under the No Build Alternative.

Traffic noise levels would be slightly reduced in the school vicinity, resulting in a slightly quieter school environment than under the No Build Alternative. For more information on noise-related issues, see Section 3.15.

### **Environmental Justice**

Based on demographic analysis and outreach, no disproportionately high or adverse environmental effects on human health or the environment would occur to the minority populations identified in the project area as a result of construction or operation of any of the build alternatives. That is, any adverse effects suffered by minority and low-income populations will be no more severe or greater in magnitude than those suffered by the non-minority population and/or non-low-income population. Therefore, none of the build alternatives would have an adverse environmental justice impact.

### **Construction Impacts**

Construction of any of the build alternatives would temporarily affect the population, community character, and access to community facilities in the project area. Traffic, air quality, and noise impacts (as discussed in Sections 3.6, 3.14, and 3.15, respectively) would temporarily combine to slightly reduce quality of life to varying degrees under the different alternatives. See further discussion in the sections for each alternative below. In addition, an increase in construction employment would temporarily increase the population in the Cooper Landing area, mostly in the snow-free months, over 3 to 4 years as discussed in Section 3.5, Economic Environment.

Regarding environmental justice, construction of any of the build alternatives would result in no disproportionately high or adverse environmental effects on human health or the environment for the minority populations identified in the project area.

### **Mitigation**

To direct and inform visitors of businesses and services in Cooper Landing, signs would be constructed at the intersections of the alternative with the “old” highway that would direct people to the community via the old highway.

#### **3.3.2.3 Cooper Creek Alternative**

##### **Direct and Indirect Impacts**

See the general discussion of the effects of all build alternatives above in Section 3.3.2.2. In addition to those effects, the Cooper Creek Alternative right-of-way would require relocation of some residents. The alternative would require acquisition of seven occupied residences, plus one nonprofit church residence (according to Borough property records). This represents a population of approximately 11 out of a current population of 289<sup>2</sup>. Relocated residents could choose to stay in Cooper Landing or move to another community. The number of directly affected people represents about 4 percent of the total population. Comparable housing does exist in Cooper

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<sup>2</sup> According to 2010 U.S. Census data, the average household size in Cooper Landing is 1.8 people; 6 households multiplied by the average household size would be approximately 11 people.

Landing (4 comparable residences in 2011; see Appendix B, the *Conceptual Relocation Study*). However, even if none of the dislocated people relocate back in Cooper Landing, the small number affected would not affect population trends or social groups.

The Cooper Creek Alternative would have different effects on the community than the other build alternatives because it would continue to bring all traffic through the portion of Cooper Landing northeast of the Kenai Lake outlet, diverting through-traffic away from town only southwest of the Kenai Lake outlet. The other build alternatives are routed around the entire community. This alternative would somewhat improve the social environment and enhance the community character of Cooper Landing by diverting through-traffic away from the western portion of town. With roadway congestion eased in that area, travel there would be safer and more enjoyable, somewhat improving positive social interaction. Because that area is generally the town center, it would have a positive effect on the community as a whole.

However, the main highway and all its traffic would continue to separate this area from areas along Snug Harbor Road and areas along the highway on the north side of the Cooper Landing Bridge. In this northeast part of the community, the existing highway would be wider, with turning lanes and improved intersections, but all through-traffic and local traffic still would pass through this portion of the community. Its atmosphere would contrast markedly with the area to the southwest, where the highway would experience no widening but where only 30 percent of traffic would remain, resulting in a calmer atmosphere.

### **Construction Impacts**

Construction of the Cooper Creek Alternative could temporarily affect access to Cooper Landing Public Library and Cooper Landing School and Library on Bean Creek Road, as well as to Cooper Landing Volunteer Fire and Ambulance and the U.S. Post Office on Snug Harbor Road. Although vehicle access to all community and public safety facilities would be maintained throughout construction, short detours and some delays may be necessary. Nighttime closures, localized congestion, traffic delay, and queuing during construction may also be experienced. Permanent traffic impacts are further discussed in Section 3.6.

### **Mitigation**

Early notification, signage, and other necessary traffic control measures would be taken during construction to minimize disruption to traffic patterns and access to community facilities.

#### **3.3.2.4 G South Alternative**

##### **Direct and Indirect Impacts**

Acquisition of right-of-way for the G South Alternative would not require relocation of any residences or businesses (see Section 3.4). This alternative therefore would not affect population trends or social groups in Cooper Landing and the surrounding area. The G South Alternative would route the highway around the entire Cooper Landing community. Effects of the G South Alternative are discussed in Section 3.3.2.2 above.

### **Construction Impacts**

Construction of the G South Alternative would not affect operations and provision of services at community and public facilities within the community of Cooper Landing, nor would construction affect direct access to these facilities from the highway. Realigning and widening

the existing highway outside of the core community of Cooper Landing could result in traffic delays and temporarily affect general circulation of traffic, including emergency response, in the broader project area.

### **Mitigation**

Early notification, signage, and other necessary traffic control measures would be taken during construction to minimize disruption to traffic patterns and access to the community as a whole.

### **3.3.2.5 Juneau Creek and Juneau Creek Variant Alternatives**

#### **Direct and Indirect Impacts**

Acquisition of right-of-way for the Juneau Creek and Juneau Creek Variant alternatives would not require relocation of any residences or businesses. These alternatives therefore would not affect population trends or social groups in Cooper Landing and the surrounding area. These alternatives would route the highway around the Cooper Landing community. Effects of these alternatives are discussed above in Section 3.3.2.2 above.

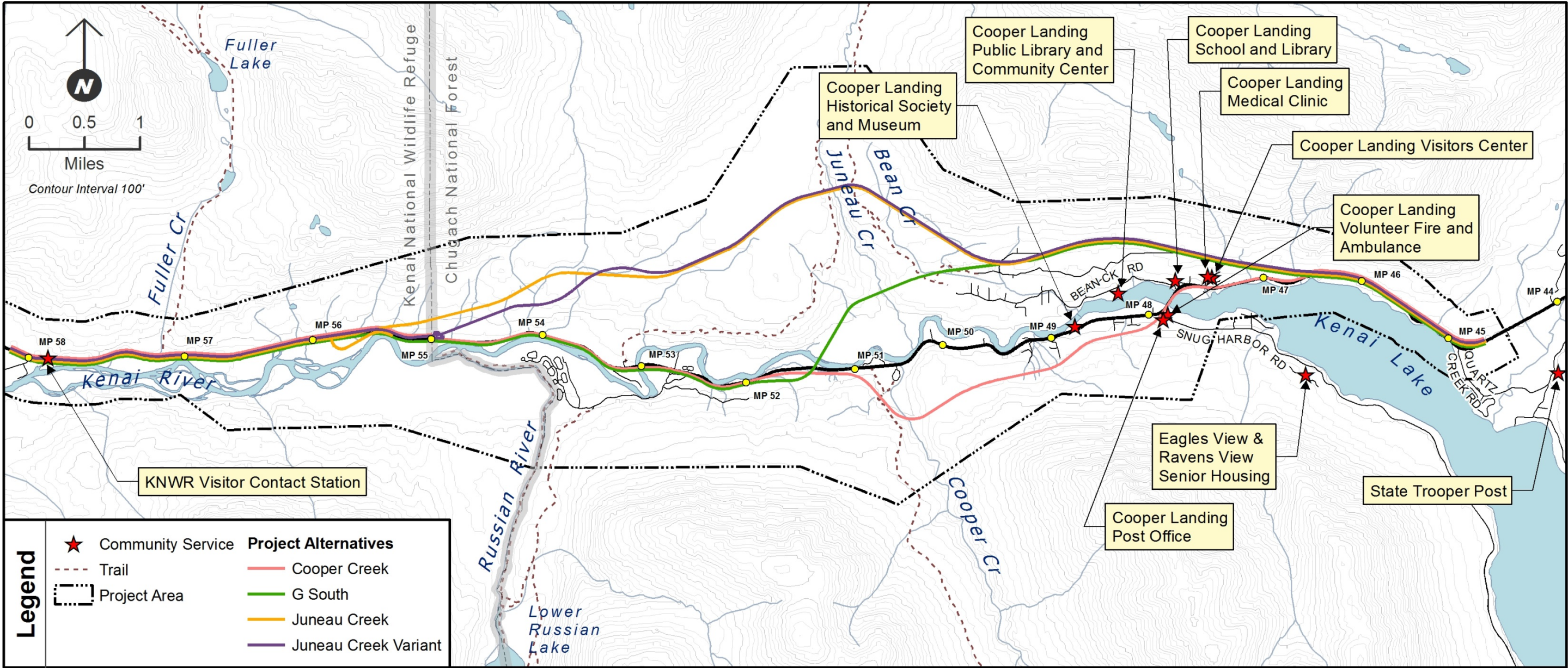
#### **Construction Impacts**

Construction of the Juneau Creek or Juneau Creek Variant alternatives would not affect operations and provision of services at community and public facilities within the community of Cooper Landing, nor would construction affect direct access to these facilities from the highway. Realigning and widening the existing highway outside of the core community of Cooper Landing could result in traffic delays and temporarily affect general circulation of traffic, including emergency response, in the broader project area.

### **Mitigation**

Early notification, signage, and other necessary traffic control measures would be taken during construction to minimize disruption to traffic patterns and to access to the community as a whole.





Map 3.3-1. Community features and facilities

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## 3.4 Housing and Relocation

This section provides an examination of effects related to potential relocation of households. No business relocations are anticipated with any of the alternatives. Economic effects are discussed in Section 3.5.

### 3.4.1 Affected Environment

According to the 2010 U.S. Census, there were 395 housing units in Cooper Landing, of which 234 were vacant (Table 3.4-1). Of the 234 vacant housing units, 207 were used seasonally and are generally not available for long-term rentals. The total number of housing units increased by 41 percent from 1990 to 2010, and occupied units increased by 59 percent during the same time frame. However, the number of housing units that are vacant because of seasonal use continues to exceed the number of occupied houses (Table 3.4-1).

Between 1990 and 2010, the median value of homes more than doubled from \$105,800 to \$239,200. Rental rates also more than doubled during this time from \$263 per month to \$690 per month.

**Table 3.4-1. Cooper Landing housing characteristics**

	<b>2010</b>	<b>2000</b>	<b>1990</b>
<b>Total Housing Units</b>	<b>395</b>	<b>372</b>	<b>299</b>
Occupied housing (households)	161	162	101
Vacant housing	234	217	180
Vacant due to seasonal use	207	184	--
Owner-occupied housing	117	119	78
Median value of owned homes	\$239,200	\$213,500	\$105,800
Renter-occupied housing	44	43	23
Median rent paid	\$690	\$775	\$263
Total households	161	162	101
Average household size (persons)	1.80	2.14	2.40
Family households	89	96	70
Average family household size (persons)	2.28	2.74	--
Non-family households	72	66	31
Population living in households	289	347	--
Population living in group quarters	0	22	0
<b>Housing Structure Types</b>			
Single family (detached)	321	303	254
Single family (attached)	0	12	0
Duplex	0	17	4
3 or 4 units	7	6	2
5 to 9 units	0	0	0

	2010	2000	1990
10 to 19 units	0	0	0
20+ units	0	8	0
Trailers/mobile homes	8	18	19
Boats/other types	0	8	2

Source: USCB (2010a, 2010b).

Note: Census figures estimated, based on sample: 14.9% of Cooper Landing households in 1990; 14.8% in 2000.

### **3.4.2 Environmental Consequences**

This section discusses impacts to residential and commercial properties in the project area and relocations that would result from implementation of the alternatives. An estimate of the number of households to be displaced and a discussion of comparable replacement property are included. Because the project would result in relatively few displacements, information on race, ethnicity, and income levels is not included in this Draft Supplemental Environmental Impact Statement (SEIS) to protect the privacy of those affected. See Sections 3.3 (Social Environment) and 3.5 (Economic Environment) for general information on social and economic impacts. Information on relocations and acquisitions is provided in the *Updated Conceptual Stage Relocation Study*, Appendix B of this SEIS.

#### **3.4.2.1 No Build Alternative**

##### **Direct and Indirect Impacts**

No direct or indirect relocation impacts would be expected as a result of the No Build Alternative.

#### **3.4.2.2 Issues Applicable to the Build Alternatives**

Privately owned properties would be affected through implementation of the build alternatives due to right-of-way acquisition requirements. Table 3.4-2 details the affected parcels by ownership type for the build alternatives. Federal, State, and Kenai Peninsula Borough land ownership effects, along with other details on private and Native corporation lands, are discussed in Section 3.1, Land Ownership, and Section 3.2, Land Use Plans and Policies. No business relocations are anticipated with any of the alternatives.

**Table 3.4-2. Ownership and right-of-way acquisition by alternative**

Ownership and Acquisition Type	Cooper Creek	G South	Juneau Creek	Juneau Creek Variant
<b>Private</b>	<b>38</b>	<b>4</b>	<b>4</b>	<b>4</b>
Full Parcel	16	0	0	0
Part of Parcel	22	4	4	4
<b>Native Corp. (CIRI)</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>1</b>
Full Parcel	0	0	0	0
Part of Parcel	2	2	0	1



### **3.4.2.3 Cooper Creek Alternative**

The Cooper Creek Alternative would generally follow the existing Sterling Highway alignment, widening the right-of-way in many areas and affecting adjacent properties. The alignment would deviate at the west end of the Cooper Landing Bridge, and involve constructing 3.5 miles of new highway south of Cooper Landing between approximately Milepost (MP) 46 and MP 48.5.

#### **Direct and Indirect Impacts**

Right-of-way acquisition to construct the Cooper Creek Alternative would affect 38 privately owned parcels and 2 parcels owned by Cook Inlet Regional, Inc. (CIRI), a Native corporation formed under the Alaska Native Claims Settlement Act (see Section 3.1.1 in Land Ownership).

Of the 38 private parcels, 16 would be total acquisitions.

According to 2013 Kenai Peninsula Borough tax assessment information, the 16 total acquisitions include:

- Seven residential parcels with structural improvements to the properties (requiring relocation)
- One property with a residence owned by the Kenai Lake Baptist Church (requiring relocation)
- Six vacant residential parcels
- Two residential accessory building parcels

The total assessed property values of the full acquisitions range from approximately \$140,000 to \$315,000. None of the total acquisitions would require relocation of businesses, farms, or non-profit organizations. None of the partial acquisitions would require the relocation of any residences, businesses, farms, or non-profit organizations.

According to the 2010 U.S. Census data, the average household size in Cooper Landing is 1.8 people. Using average household size for each of the 8 relocated residences, approximately 14 people could be expected to be displaced under the Cooper Creek Alternative.

There are limited numbers of residential properties available for sale in Cooper Landing, and available housing may not be adequate to accommodate the relocations at the time of displacement. According to local real estate listings from research conducted in November 2013, three comparable residences in the \$200,000 to \$350,000 price range were available in Cooper Landing (Table 3.4-3). Of the eight displaced residences, five residences have an assessed value within this price range; comparable housing for the three residences valued at less than \$200,000 is not currently available within Cooper Landing. Federal Highway Administration regulations found at 49 CFR § 24.301(g) provide for relocations and transportation expenses for displaced persons for up to 50 miles away. Availability of comparable housing within 50 miles of Cooper Landing would include the larger communities of Seward, Sterling, and Soldotna, where sufficient replacement housing exists (see Appendix B). An update will be made on the availability of replacement housing for the Final Environmental Impact Statement.

**Table 3.4-3. Cooper Landing residences for sale in \$200,000 to \$350,000 price range**

Style	Single Family House	Price Range <sup>a</sup>
1 Bedroom	1	\$219,000
2 Bedrooms	0	-
3 Bedrooms	2	\$289,000 - \$325,000
4 Bedrooms	0	-

<sup>a</sup> No residences less than \$200,000 were available at the time of research.

No indirect relocation impacts are expected as a result of the Cooper Creek Alternative.

### **Construction Impacts**

Relocation impacts would occur during the right-of-way acquisition phase of the project prior to construction; no relocation impacts are anticipated during the construction phase.

### **Mitigation**

Adversely affected and appropriately qualified property owners would be assured fair compensation, as provided by the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended, and the Alaska Relocation Assistance and Real Property Acquisition Practices, Alaska Statutes (AS) 34.60.010 et seq. Relocation resources would be made available to all relocated residents and businesses without discrimination. “Housing of last resort” options would be implemented if adequate comparable housing were not available on the market.

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 and the Uniform Relocation Act Amendments of 1987 provide uniform and equitable treatment for persons displaced from their homes, businesses, or farms by Federal and Federally assisted programs, and establish uniform and equitable land acquisition policies for Federal and Federally assisted programs. Whenever a Federal agency’s acquisition of real property for a program or project results in displacement of someone, the agency is required to reimburse the displaced persons and provide relocation planning, assistance coordination, and advisory services. Residents displaced by a Federal program generally are relocated to existing housing in the community. Businesses generally are relocated to similar business settings. The cost of relocating is covered as part of the relocation process. Without discrimination, all owners of acquired property are compensated for their loss of property at fair market value, and all displaced persons are moved at no expense to them in accordance with the law.

Regulations found at 49 CFR § 24.404 provide for what is called “Housing of Last Resort,” which requires that comparable decent, safe, and sanitary replacement housing within a person’s financial means be made available before that person may be displaced. These measures could apply if comparable housing were not available on the housing market. The agency may provide the necessary housing in a number of ways, such as:

- Providing replacement housing payments or rental assistance in excess of normal limits set in the law
- Purchasing an existing comparable residential dwelling and making it available to the affected party in exchange for the impacted dwelling

- Moving and rehabilitating a dwelling and making it available to the affected party in exchange for the impacted property
- Purchasing, rehabilitating, or reconstructing an existing dwelling to make it comparable to the impacted property
- Purchasing land and constructing a new replacement dwelling comparable to the impacted dwelling when comparable housing is not otherwise available
- Purchasing an existing dwelling, removing barriers, or rehabilitating the structure to accommodate a handicapped displaced person when a suitable comparable replacement dwelling is not available
- Providing a direct loan that would enable the affected party to construct or contract for the construction of a decent, safe, and sanitary replacement dwelling

#### **3.4.2.4 G South Alternative**

The G South Alternative would include approximately 5.6 miles of new alignment north of the existing Sterling Highway, between approximately MP 46.3 and MP 55.6. The affected properties by ownership type are described in Table 3.4-2.

##### **Direct and Indirect Impacts**

The G South Alternative would not require relocation of any residences or commercial properties. Right-of-way for this alternative would require partial acquisition of four private properties and two Native corporation-owned properties.

No indirect relocation impacts are expected as a result of the G South Alternative.

##### **Construction Impacts**

No relocation impacts would occur during the construction phase of this alternative.

##### **Mitigation**

The G South Alternative would not require relocation of any residences or commercial properties, and therefore no mitigation is required.

#### **3.4.2.5 Juneau Creek and Juneau Creek Variant Alternatives**

The Juneau Creek Alternative and Juneau Creek Variant Alternative would provide approximately 10 and 9 miles of new roadway alignment, respectively, from MP 46.3 to the vicinity of Sportsman's Landing in the MP 55–56 area. The affected properties by ownership type are described in Table 3.4-2 for these two build alternatives.

##### **Direct and Indirect Impacts**

The Juneau Creek and Juneau Creek Variant alternatives would not require relocation of any residences or commercial properties. The right-of-way for these alternatives would require partial acquisitions of four privately owned properties. In addition, for the Juneau Creek Variant Alternative only, the right-of-way would require partial acquisition of one Native-owned property, CIRI Tract A. The Juneau Creek Variant Alternative would require approximately 12.3 acres of the 42-acre parcel. See Section 3.1, Land Ownership. The Juneau Creek Alternative would avoid impacts to Native-owned properties.

No indirect impacts are expected as a result of the Juneau Creek Alternative.

**Construction Impacts**

Neither of these alternatives would have relocation impacts during the construction phase.

**Mitigation**

The Juneau Creek and Juneau Creek Variant alternatives would not require relocation of any residences or commercial properties, and therefore no mitigation is required.



## 3.5 Economic Environment

### 3.5.1 Affected Environment

#### 3.5.1.1 Kenai Peninsula Borough

##### Employment and Earnings

Data from the Alaska Department of Labor and Workforce Development indicate that the total number of jobs in the Kenai Peninsula Borough (Borough) increased by 20.9 percent from 1990 to 2010, an average annual increase of 1.3 percent (2011).

The 2010 earnings for residents in the Borough were approximately \$788 million in total annual earnings and \$3,432 in average monthly earnings per wage earner (ADOLWD 2011). The Borough had 19,123 wage and salary workers earning an average annual wage of \$41,190 in 2010, compared to the statewide average annual wage of \$47,710 (ADOLWD 2011). See Table 3.5-1.

**Table 3.5-1. Kenai Peninsula Borough 2010 employment and earnings**

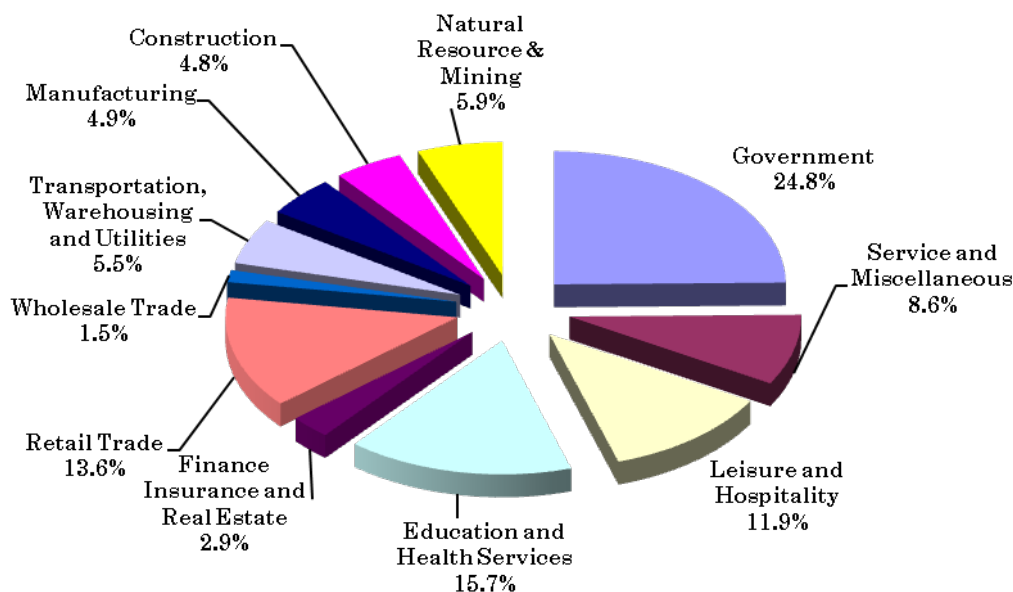
Type of Employment	Average Monthly Employment for 2010	Total Annual earnings (\$)	Average Monthly Earnings (\$)
<b>Total employment</b>	19,123	787,672,297	3,432
<b>Private ownership</b>	14,384	560,012,972	3,245
<b>Goods-producing</b>	2,994	203,928,030	5,677
Natural resources and mining	1,135	103,439,364	7,596
Construction	926	55,716,054	5,015
Manufacturing	933	44,772,612	4,000
<b>Service-providing</b>	11,390	356,084,942	2,605
Trade, transportation, and utilities	3,930	137,676,579	2,919
Information	230	9,725,795	3,532
Financial activities	546	26,353,805	4,020
Professional and business services	576	23,555,735	3,407
Education and health services	3,011	102,973,341	2,850
Leisure and hospitality	2,267	37,790,983	1,389
Other services	824	17,834,272	1,804
<b>Government services</b>	4,740	227,659,325	4,003
Federal	451	30,304,123	5,605
State	1,270	62,552,096	4,104
Local	3,019	134,803,106	3,721

Source: ADOLWD (2011).

### Major Employment Industries

The government sector represented 24.8 percent of Borough employment in 2010, leisure and hospitality represented 11.9 percent, and the retail trade sector represented 13.6 percent.

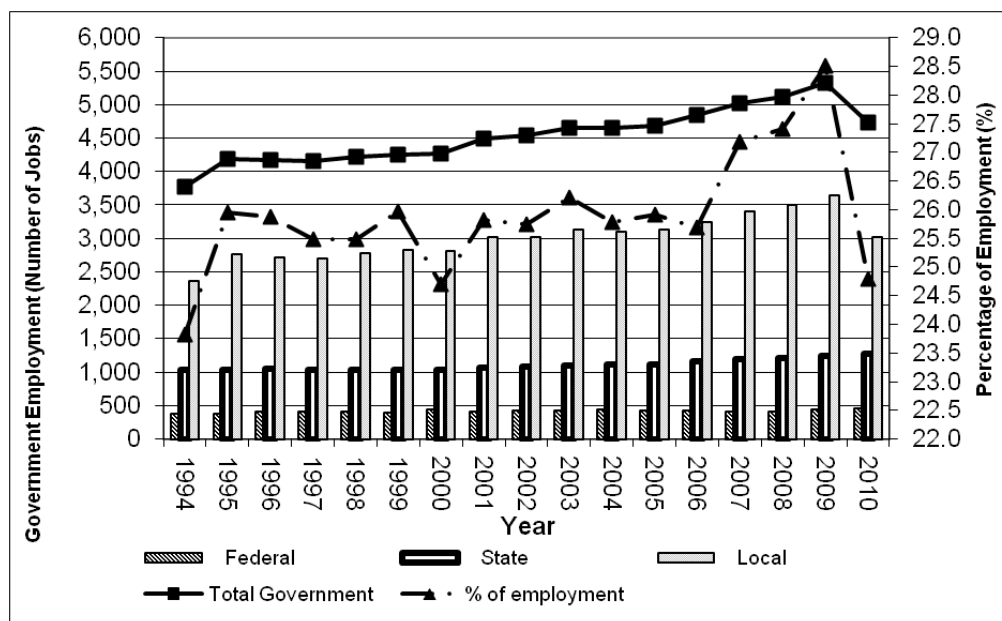
Figure 3.5-1 illustrates the breakdown of employment by sector in the Borough in 2010 (ADOLWD 2011).



**Figure 3.5-1. Kenai Peninsula Borough employment by sector, 2010**

Tourism (best represented by the Leisure and Hospitality sector in Figure 3.5-1, but overlapping with other sectors) is the fastest-growing industry in the Borough and has emerged as a dynamic sector of the economy, as in many parts of Alaska. From 1994 to 2004, the number of visitor arrivals to the State of Alaska increased 55 percent from 931,400 to 1,447,400 (Northern Economics 2004). Since then, the number of out-of-state visitors has increased slightly. Between May 2010 and April 2011, an estimated 1.75 million out-of-state visitors traveled to Alaska (McDowell Group July 2011). Tourism-related employment and seasonal businesses provide the majority of employment in the Borough. The tourism industry in Alaska generates substantial income for the State and generates employment in a variety of industries such as transportation, retail trade, and services. The Alaska Department of Community, Commerce, and Economic Development (ADCCED) total visitor industry employment, labor income, and spending in Alaska between October 2008 and September 2009 was estimated at \$3.4 billion (McDowell Group 2010).

Local and State government employment is heavily dependent on area population, demand for government services, and available revenue. Government employment and spending play key roles in the Borough, as shown in Figure 3.5-2. The columns illustrate government employment distributed by Federal, State, and local governments. Government jobs represented 24.8 percent (or 4,740 jobs) of the total wage employment in the Borough in 2010, and an average of 25.9 percent of employment during the entire 17-year period (1994 to 2010).



**Figure 3.5-2. Kenai Peninsula Borough government employment, 1994–2010**

Source: ADOLWD (2011).

Nearly one-fourth of workers in the Borough are employed by Federal, State, and local governments and earn more than Borough average wages. Local government workers represent two-thirds of the government sector and have earnings closer to the Borough-wide average.

### Tax Base

The Borough has instituted property taxes (real estate, plus personal property, such as boats) and a sales tax to sustain Borough operations. In the project area, private land, homes, and businesses are taxed. Borough lands in the project area include some surveyed and subdivided lands intended for eventual residential settlement, which ultimately would become taxable lands that would contribute to the Borough tax base. Most Borough-owned lands in the project area are classified for preservation or recreation in *Kenai Peninsula Borough Comprehensive Plan* documents and are not currently anticipated to be developed or to become part of the tax base (KPB 2005b). State lands in Unit 395 north of the Kenai River could be transferred to the Borough and be sold to private parties for residential use. If this occurred, these lands could become part of the Borough tax base.

#### 3.5.1.2 Cooper Landing

##### Employment, Earnings, and Businesses

According to 2005–2009 American Community Survey (ACS) data, 223 people were employed in Cooper Landing (Table 3.5-2). Employment in the sales and office sector dominates the small Cooper Landing labor market, encompassing 44 percent of the Cooper Landing employment population. In 2013, 120 unique licensed businesses had addresses in Cooper Landing (ADCCED 2013). The predominant business sectors within Cooper Landing are categorized by the following industries: approximately 22.5 percent of the businesses were licensed in accommodation and food services; 15.8 percent in arts, entertainment, and recreation; 10.8 percent in real estate, rental, and leasing; 9.2 percent in trade; and 9.2 percent in professional, scientific, and technical services (see Table 3.5-3 and ADCCED (2013)).

**Table 3.5-2. Cooper Landing income and employment, 2005–2009<sup>1</sup>**

<b>Income and Poverty Levels</b>	
Per capita income	\$30,324
Median household income	\$72,837
Median family income	\$74,135
Persons in poverty	0
Percent below poverty	0
<b>Employment</b>	
Total potential work force (age 16+)	287
<b>Total Employment</b>	<b>223</b>
Civilian	223
Military	0
Civilian unemployed (and seeking work)	19
Percent unemployed	0
Adults not in labor force (not seeking work)	45
Percent of all 16+ not working (unemployed and not in labor force)	22.3
Private wage and salary workers	117
Self-employed workers (in own not-incorporated business)	73
Government workers (city, Borough, State, Federal)	33
Unpaid family workers	0
<b>Employment by Occupation</b>	
Management, professional and related	39
Service	31
Sales and office	99
Farming, fishing, and forestry	0
Construction, extraction, and maintenance	54
Production, transportation, and material moving	0
<b>Employment by Industry</b>	
Agriculture; forestry; fishing and hunting; mining	7
Construction	53
Manufacturing	0
Wholesale trade	0
Retail trade	89
Transportation, warehousing, and utilities	0
Information	16
Finance, insurance, real estate, rental and leasing	10
Professional, scientific, management, administrative and waste management	0
Education, health and social services	0
Arts, entertainment, recreation, accommodation and food services	48
Other services (except public administration)	0
Public administration	0

Source: USCB (2010b).

<sup>1</sup> These figures are from the ACS 5-Year Estimate and are based on a sample and are the average of 5 years of monthly surveys. These estimates will not match counts from the 2010 U.S. Census.

**Table 3.5-3. Cooper Landing licensed businesses by industry, 2013**

<b>Industry Type</b>	<b>Number of Businesses</b>	<b>Percent of Businesses</b>
Agriculture, forestry, fishing, and hunting	5	4.2
Mining	1	0.8
Construction	9	7.5
Manufacturing	3	2.5
Trade	11	9.2
Transportation and warehousing	3	2.5
Information	2	1.7
Real estate, rental, and leasing	13	10.8
Professional, scientific, and technical services	11	9.2
Administrative, support, waste management, and remediation services	6	5.0
Educational services	2	1.7
Health care and social assistance	3	2.5
Arts, entertainment, and recreation	19	15.8
Accommodation and food services	27	22.5
Services	5	4.2
<b>Total</b>	<b>120</b>	<b>100.0</b>

Source: ADCCED (2013).

The Kenai and Russian rivers are a major draw for salmon and trout fishing and rafting for tourists and in-state recreationists. Combined with the lake, river, and mountain scenery, this drives much of the local economy. Many bed and breakfast inns, resorts, and fishing lodges in Cooper Landing accommodate visitors. The economy is seasonal and experiences a fluctuation of annual employment as businesses reduce the number of employees or close entirely during the winter. The 86-room Kenai Princess Lodge, located in Cooper Landing, employs approximately 100 people in the summer and 8 people in the winter. The lodge accommodates Princess Cruise ship passengers and other visitors. Flight-seeing trips and floatplane trips are available locally as well.

River-based businesses provide guided fishing and recreational floating services, and many are located along the Kenai River (between the existing highway and the river) immediately west of the outlet of Kenai Lake. Many launch drift boats or rafts directly from their own properties. Others transport bank-fishing guests to the river, or transport boating guests to the Cooper Landing boat launch ramp to begin a day trip to Sportsman’s Landing, Jim’s Landing, or Skilak Lake. In addition, a number of float and guide services from nearby communities use the upper Kenai River on a day-to-day basis.

There are many businesses in Cooper Landing that can be described as highway-based that benefit from their locations on or in proximity to the Sterling Highway. These include gas stations, gift shops, dining establishments, and, to a lesser extent, lodging. There are two gas stations in the project area, one at the eastern end of the project near Quartz Creek Road and one

just west of the Kenai Lake outlet. There are several dining establishments immediately east and west of the Kenai Lake outlet along the highway, and more isolated eateries near Quartz Creek and near Milepost (MP) 52. Some of the restaurants are associated with other combination businesses such as a bar, service station, motel, or store. Multiple gift shops and general stores occur east and west of the Kenai Lake outlet along the highway. Accommodations in Cooper Landing include cabin and room rentals, bed and breakfast inns, motels, and the much larger Kenai Princess Lodge.

Although less of an economic driver, there are many non-tourist businesses in Cooper Landing that provide year-round services. These businesses are generally in the sectors of public administration, educational services, health care services, professional and technical services, and construction.

In 2005, the project team conducted community meetings and personal interviews with many of the Cooper Landing business owners located on the Sterling Highway from MP 45 to 52, Bean Creek Road, and Quartz Creek Road to gain a perspective on the business community's perception of alternatives routed around or through Cooper Landing. Results from meetings and interviews regarding the project effects by type of business are summarized by the following general statements:

- **River-Based Businesses** - River-based businesses (i.e., guiding and lodging businesses catering to fishing and recreational opportunities) were more destination-oriented and less concerned about the loss of drive-by customers. The project team learned that business owners were much more concerned about protecting the river and reducing traffic congestion in the area where they transport rafts and clients.
- **Highway-Based Businesses** - Highway-based businesses (i.e., retail businesses, such as gas stations, grocery and general merchandise stores, restaurants, motels) were most concerned about reduced business or the need to close in winter if traffic no longer passed by their businesses. The project team learned that about 30 percent of highway-based business was from spontaneous stops by those passing by on the highway.

Not all businesses fit neatly into these categories, and businesses that might seem to be “river-based” also get drop-in business. The following local businesses interviewed for this project in 2005 estimated the percentage of their business from highway travelers:<sup>2</sup>

- Kenai Float-n-Fish: 30 percent
- Hamilton's: 100 percent
- Cooper Landing Grocery: 30 percent in summer, 90 percent in winter
- Alaska Rivers Company: 40 percent
- Gwin's Lodge: 30 percent

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<sup>2</sup> This is meant as a general representation of the importance of highway travelers to business owners, but not as a compilation of all businesses in the area. Project personnel interviewed a larger number of businesses in 2005, but several no longer exist, and even at that time interviews were a sample and not comprehensive.

### **3.5.1.3 Project Area Personal Income Trends**

Personal income statistics are a function of several factors, including employment and population. Personal income statistics are a critical indicator of an area's output and economic stability. If an area's economy cannot support as many jobs as it did previously, the resulting decline in employment will also reduce total personal income for the area.

Data from the U.S. Bureau of Economic Analysis (2011) indicate that from 1990 to 2009, total personal income in the Borough increased by 144.7 percent (7.6 percent annually); however, per capita income increased by only 84.1 percent (4.4 percent annually), indicating that the economic improvement was not distributed equally among individuals in the Borough. In 2009 dollars, per capita income for Cooper Landing was \$30,324, compared to \$26,940 for the Borough (USCB 2010b).

## **3.5.2 Environmental Consequences**

This section describes the effects of the alternatives on the local Borough and Cooper Landing economies.

### **3.5.2.1 No Build Alternative**

#### **Direct and Indirect Impacts**

The No Build Alternative would not change the existing economic conditions of Cooper Landing or the Borough. No land would be removed from the tax base (land acquisitions for routine maintenance activities are discussed in Section 3.27, Cumulative Impacts). No businesses would be moved, and there would be no change to income or employment trends in the region. The No Build Alternative would continue long-term trends and patterns of business opportunities and development in Cooper Landing. Cooper Landing would continue to be the only location between Summit Lake, Moose Pass, and Sterling providing services to highway travelers.

Under the No Build Alternative, all traffic would continue to travel through the Cooper Landing central commercial area. Traffic congestion would continue to rise, and access to and parking for local businesses would become more difficult. The No Build Alternative would not alleviate the congestion, safety, and access problems of the current road.

While residents would have to endure these conditions, travelers could choose to travel to other areas for recreation if highway conditions in the project area were perceived as unsafe, unpleasant, or inconvenient. Travelers may also adjust the time of day or day of the week that they travel through Cooper Landing to avoid roadway congestion, or more travelers may choose to pass through without stopping, to minimize the time they spend in congestion or because of difficulties returning to the roadway; the latter already occurs.

Increasing congestion, safety problems, and highway noise over time could diminish Cooper Landing's appeal as a recreation and fishing destination. The draw of the Kenai River and Russian River fisheries would be expected to continue, but some recreationists could choose to overnight or shop elsewhere, or even to avoid the entire area, if the trip became too cumbersome and the quality of the experience decreased.

Because there is no proposed construction associated with the No Build Alternative, there are no project development or construction costs. There would, however, continue to be annual maintenance costs and periodic major maintenance projects (e.g., pavement overlays).

Additionally, reconstruction or replacement of the existing Sterling Highway bridges over the Kenai River is a reasonably foreseeable future action. The costs of these reasonably foreseeable future projects are addressed in the Cumulative Impacts section (see Section 3.27).

### **3.5.2.2 Issues Applicable to the Build Alternatives**

#### **Direct and Indirect Impacts**

None of the build alternatives would result in the acquisition or relocation of any business.

All build alternatives include a highway segment that would remove 70 percent of the traffic from all or a portion of the central commercial area of Cooper Landing. Thirty percent of the traffic would continue traveling through Cooper Landing on the “old” highway. A beneficial impact would be decreased congestion and improved safety for visitors, pedestrians, and residents, as well as local businesses that use the existing road in their daily business transactions, such as river guides who shuttle rafts and sport fishing clients. To varying degrees, all of the build alternatives also have the potential to adversely affect individual businesses by diverting some travelers who might make spontaneous stops from the “old” highway segment where many of the businesses are located. These spontaneous stops constitute a meaningful portion of their clientele, especially for highway-related businesses such as gas stations, eateries, and convenience stores.

Through-travelers who would have made unplanned stops in Cooper Landing under existing conditions or with the No Build Alternative would likely not pass through all or any portion of the town under a build alternative. With no town center or other new attractions in Cooper Landing, the diversion of traffic around its commercial portion could negatively impact sales and revenue for roadside businesses no longer on the main highway. Businesses would be forced to adapt, and if they were unable to adapt, some could fail. (See further discussion under each alternative in the sections below.)

However, because the Alaska Department of Transportation and Public Facilities (DOT&PF) would not allow connecting driveways or side roads on the segment of each alternative built on a new alignment, no competing commercial development is anticipated as a result of this project. No new competition for goods and services associated with the new alignments would occur, and the build alternatives would not create any new access to developable lands.

People currently relying on Cooper Landing businesses would likely continue to do so, although some spontaneous economic activity would be decreased. During community meetings and interviews conducted in 2005, the project team found that many businesses thought an alternative that would reconnect west of the Russian River would minimize business impacts somewhat because anglers would be more likely to continue to drive through the community to access fishing and would be more likely to patronize existing businesses.

All build alternatives would decrease travel time and improve ease of travel to the western and southwestern parts of the Kenai Peninsula. Visitation at popular vacation and fishing destinations may increase on the peninsula. Development of second homes and retirement homes may also increase, as it would be easier to get to Cooper Landing and other popular second-home locations on the western Kenai Peninsula from large population centers such as Anchorage. Cooper Landing could experience greater competition for visitors to lower Kenai River areas. However, with one of the primary fishing concentration areas of the Kenai River system located at the mouth of the Russian River, and the upper Kenai River’s unique “drift only” regulations, it is



anticipated that recreational users would continue to be attracted to the area in numbers similar to those of recent years to fish and camp, and these people would continue to use local food, gas, lodging, and gift-sales businesses.

A positive economic effect under the build alternatives would be the reduced risk of a catastrophic accidental spill of fuels, chemicals, or similar materials being transported by truck (see Section 3.17, Hazardous Waste Sites and Spills). Such events would be harmful to the Kenai River and therefore to the economic stability of the community and commerce of Cooper Landing that is dependent on clean water and healthy fish populations. Trucks would not be prohibited from using the “Old Sterling Highway” under any of the build alternatives, because local fuel, food, and other deliveries still would need to be made. It is anticipated, however, that through-movements would use the segment of each alternative built on a new alignment. Only direct deliveries to local destinations would use the “old” highway, thereby decreasing the risk of spills in the river by decreasing the number of trucks on the winding “old” road, which is located adjacent to the river in many areas.

Proposed mitigation for recreation impacts includes trailhead improvements, increased or improved access, and better directional and interpretive signs (see Section 3.8, Park and Recreation Resources). These improvements have the potential of making the area more attractive to recreational visitors. These visitors may shop, buy gas, or engage in tourism-related activities like drift boating, or may overnight in the community of Cooper Landing. These potential economic benefits may positively affect the community and business owners.

Furthermore, as a result of improved travel times through the project area, truck-freight shipping and intercity travel through the project area would be improved. Transportation improvements would have a positive impact on the Borough as a whole by improving the movement of people and goods, perhaps resulting in a slower rise in shipping costs, more timely delivery of goods, and ease of travel, which may increase tourism.

Construction funding would come mostly from the Federal government and partly from the State of Alaska. Therefore, neither the Borough nor Cooper Landing would be affected any differently than all Alaska residents in regard to construction funding. Funds would go toward labor, most likely benefitting a primarily Alaska labor market, and toward a substantial supply chain both inside Alaska and from other states for fuel, equipment, pipe, earth materials and concrete, erosion control material, materials for bridges, and other materials. There are generally more transportation projects identified than there is funding to construct them; to the extent Federal and State transportation dollars were allocated to this project, they would not be available for other transportation needs.

Construction costs for the build alternatives are based on 2010 unit prices adjusted to 2014 dollar values. Table 3.5-4 shows projected construction costs by alternative. For additional information and cost estimate details, refer to Appendix B of the *Preliminary Engineering Report* (HDR 2014a).

**Table 3.5-4. Project costs by alternative (millions of dollars)**

	Cooper Creek	G South	Juneau Creek	Juneau Creek Variant
<b>Project Development</b>				
Permitting, design, utility, right-of-way, <sup>a</sup> DOT&PF overhead/administration (ICAP <sup>b</sup> )	<b>\$54.5</b>	<b>\$53.1</b>	<b>\$44.2</b>	<b>\$45.4</b>
<b>Direct Construction</b>	<b>\$236.2</b>	<b>\$250.4</b>	<b>\$205.4</b>	<b>\$211.6</b>
- Roadway costs	\$92.6	\$92.3	\$96.5	\$97.6
- Bridge and structure costs	\$78.5	\$89.2	\$52.4	\$55.8
- Contingency (20%) and construction administration (15%)	\$65.0	\$69.0	\$56.6	\$58.3
<b>Construction Subtotal</b>	<b>\$290.5</b>	<b>\$303.5</b>	<b>\$249.6</b>	<b>\$257.0</b>
<b>O&amp;M and Periodic Major Activities (over 20 years)</b>	<b>\$23.7</b>	<b>\$23.8</b>	<b>\$24.2</b>	<b>\$24.3</b>
- Operations and Maintenance <sup>c</sup>	\$11.9 (\$593,400/yr)	\$11.7 (\$585,400/yr)	\$12.2 (\$608,600/yr)	\$12.2 (\$611,700/yr)
- Periodic Major Activities <sup>d</sup>	\$11.8	\$12.1	\$12.0	\$12.1
<b>TOTAL</b>	<b>\$314.4</b>	<b>\$327.3</b>	<b>\$273.8</b>	<b>\$281.3</b>

<sup>a</sup> The right-of-way cost estimates the land payment portion only of right-of-way acquisition. It does not address the other per parcel costs of right-of-way acquisition. Furthermore, these costs consider only privately owned land impacted by the alternatives. Impacted parcels owned by Federal, State, and municipal agencies are assumed to be acquired via interagency land transfers.

<sup>b</sup> Indirect Cost Allocation Plan

<sup>c</sup> O&M = Operations and maintenance; includes annual costs such as snow plowing, crack sealing, and other basic maintenance on the alignments.

<sup>d</sup> Periodic major activities include projects such as replacement of guardrail and pavement overlays that are reasonably anticipated over a 20-year span.

Note: Numbers are rounded and therefore totals do not add perfectly. All estimates are in 2014 dollars (i.e., future dollars have not been inflated to the future year values).

## **Construction Impacts**

All build alternatives are likely to have short-term economic benefits to the local economy due to construction crews living in the area during several construction seasons. There is also the potential for temporary local hires while the project is under construction. These construction impacts would bring money into the community of Cooper Landing, which would temporarily spur economic growth for individuals and the community.

Construction spending under the build alternatives would include wages for construction workers, likely over 4 years. Spending by construction workers for goods and services in the community and in their home communities would create a multiplier effect, as spending for meals, lodging, and services would indirectly employ local workers. Construction jobs would include jobs held by local residents, by people who may move to the community on a temporary basis, and by those who would commute to the community for employment during construction.

Under any of the build alternatives, an anticipated 60 to 70 workers would likely be located on site during the snow-free season, with other workers coming in and out of the area regularly depending on the specific activities underway at any given time. DOT&PF typically works to accommodate DOT&PF staff in local housing, an economic benefit to local owners who would rent out the space. If sufficient space were not available to house workers during the busy summer recreation and tourist season in Cooper Landing, it is likely the contractor would establish an area for campers and motor homes (in a work camp), likely within designated construction staging or material extraction areas. Including the entire supply chain for bridges and culverts, fuel, construction tools and equipment, delivery, and administration of the project, the economic impact of project construction would be widespread.

Traffic flows and access to commercial areas would be disrupted when construction activities were located along the existing alignment. Flaggers, pilot cars, minor detours, and truck traffic hauling materials also would disrupt normal traffic flows and ease of access between the highway and businesses. Individual delays may be short in duration and highly localized. However, without an alternative route to avoid construction activity, local residents and frequent through-travelers may become frustrated. This may cause some travelers to avoid or postpone trips to Cooper Landing and project area businesses, and the delays may cause through-travelers to avoid additional stops and purchases at local businesses. Construction impacts such as noise and alteration of local recreation access are documented in other sections and may contribute to temporary economic impacts to local businesses and services.

### **Mitigation**

Each alternative includes a new alignment that bypasses most (i.e., Cooper Creek Alternative) or all (i.e., G South, Juneau Creek, and Juneau Creek Variant alternatives) of the business district. To direct and inform visitors of businesses and services in Cooper Landing, signs would be erected at the intersections of each alternative with the “old” highway that would direct people to the community and its businesses via the old highway.

#### **3.5.2.3 Cooper Creek Alternative**

##### **Direct and Indirect Impacts**

The Cooper Creek Alternative would have different effects on community businesses than the other build alternatives because this alternative would continue to bring all traffic through the portion of Cooper Landing northeast of the Kenai Lake outlet, diverting through-traffic away from town only southwest of the Kenai Lake outlet. This would alter the character of the community, as described in Section 3.3, Social Environment, and would affect the business environment. Also, under this alternative, all highway traffic (through-traffic and local traffic) would continue to pass in front of many of the community’s highway-based businesses, and drivers would be able to see much of the rest of the business district as they passed the “Old Sterling Highway”/Snug Harbor Road intersection. Impacts described above in Section 3.5.2.2 would be similar in type, but businesses located northeast of the Cooper Landing Bridge would remain on the main highway. Highway-based businesses in this area would retain the benefit of passing traffic. River-based businesses would still have to contend with 100 percent of Sterling Highway traffic. Businesses located on the existing highway west of Cooper Landing Bridge could see a reduction in impulse purchases associated with through-traffic. The overall economy would be unlikely to change, but some individual business may need to adapt to these changes.

Property tax revenues, a major source of funding for the Borough, would be directly affected by the Cooper Creek Alternative. Acquisition of private<sup>3</sup> property valued at approximately \$5.6 million (HDR 2014a) would result in an annual loss of tax revenue of approximately \$25,200<sup>4</sup> for the Borough.

Estimated annual operations and maintenance costs and project life costs (development, construction, plus O&M and periodic projects through 2043) for the Cooper Creek Alternative are \$593,400/year and \$314 million, respectively. These figures do not include maintenance of the remaining 4 miles of the “old” Sterling Highway, which DOT&PF would continue to maintain. See Section 3.27.7.5 of Cumulative Impacts for a discussion of the remnant highway section costs.

### **Construction Impacts**

The Cooper Creek Alternative would reconstruct the existing highway in front of businesses located northeast of Cooper Landing Bridge, with use of flaggers and pilot cars, minor detours, active earth moving using large equipment, and associated noise and dust. Access to businesses likely would be altered temporarily. Replacement of the Cooper Landing Bridge, Snug Harbor Road intersection, and Bean Creek Road intersection in the heart of town would generally disrupt normal traffic patterns temporarily and could result in fewer business stops by passing traffic. Similar impacts would occur for two isolated businesses, one located near MP 45 (Quartz Creek Road) and one near MP 52.

The estimated direct construction cost of the Cooper Creek Alternative is \$236 million.

### **Mitigation**

Mitigation is addressed above at the end of Section 3.5.2.2. For the Cooper Creek Alternative, access to all businesses would be maintained during business hours to the greatest extent possible. Additional signs would be used to inform motorists about how to access businesses.

### **3.5.2.4 G South Alternative**

#### **Direct and Indirect Impacts**

Beneficial and adverse impacts applicable to all the build alternatives are presented above in Section 3.5.2.2. The G South Alternative would be routed around the Cooper Landing community and its businesses entirely. It is likely that removing 70 percent of traffic from the community under the G South Alternative would adversely affect some individual businesses that are dependent on their locations adjacent to the highway. Because Cooper Landing and the project area recreation sites are a recreational destination, it is likely that economic activity by those stopping in the project area will continue. But impulse stops by through-travelers for gas and convenience items are likely to decrease at businesses that are no longer on the main highway. It is possible the decreases would be enough that businesses would have to shift their business models to take more advantage of the destination-oriented, river-dependent travelers and less on through-traffic. If they were unable to adapt to the changes, it is possible a few might close or change ownership and be reconstituted as different types of businesses. It is unlikely the

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<sup>3</sup>It is assumed that Borough land will be acquired by interagency land transfer, not purchase; therefore, it is not included in acquisition calculations.

<sup>4</sup>Based on the Borough mill rate of 4.50 (KPB 2011). Property tax was determined by multiplying the assessed value by the mill rate and then dividing by 1,000.

overall economy would be adversely affected; reduction in through-traffic may slightly enhance the overall business climate in Cooper Landing, making it easier to get around town by car and more pleasant for pedestrians. Individual businesses, however, may be adversely affected.

Property tax revenues, a major source of funding for the Borough, would be directly affected by the G South Alternative. Acquisition of private property valued at approximately \$2.9 million (HDR 2014a) would result in an annual loss of Borough tax revenue of approximately \$13,000.

The G South Alternative would require acquisition of vacant Borough properties classified for residential development in the Birch and Grouse Ridge Subdivision. Three platted undeveloped residential Borough properties with an assessed total land value of \$280,200 would be fully acquired, which would result in a loss of future Borough revenue (KPB 2013).

Estimated annual operations and maintenance costs and project life costs (development, construction, plus O&M and periodic projects through 2043) for the G South Alternative are \$585,400/year and \$327 million, respectively. These figures do not include maintenance of the remaining 5 miles of the “Old” Sterling Highway, which DOT&PF would continue to maintain. See Section 3.27.7.5, Cumulative Impacts, for a discussion of the remnant highway section costs.

### **Construction Impacts**

This alternative would likely create minor temporary access impacts for two roadside businesses, one located near MP 45 at Quartz Creek Road and one located near MP 52.

The estimated direct construction cost of the G South Alternative is \$251 million.

### **Mitigation**

Signs would be erected at the intersection of the G South Alternative with the “old” highway to indicate access routes to the community and businesses.

## **3.5.2.5 Juneau Creek and Juneau Creek Variant Alternatives**

### **Direct and Indirect Impacts**

Beneficial and adverse impacts applicable to all the build alternatives are presented above in Section 3.5.2.2. The Juneau Creek and Juneau Creek Variant alternatives would be routed around the Cooper Landing community and its businesses entirely. It is likely that removing 70 percent of traffic from the community under these alternatives would adversely affect some individual businesses that are dependent on their location adjacent to the highway. Because Cooper Landing and the project area recreation sites are a recreational destination, it is likely that economic activity by those stopping in the project area will continue. But impulse stops by through-travelers for gas and convenience items are likely to decrease at businesses that would no longer be on the main highway. It is possible the decreases would be enough that businesses would have to shift their business models to take more advantage of the destination-oriented, river-dependent travelers and less on through-traffic. If they were unable to adapt to the changes, it is possible a few might close or change ownership and be reconstituted as different types of businesses. It is unlikely the overall economy would be adversely affected; reduction in through-traffic may slightly enhance the overall business climate in Cooper Landing, making it easier to get around town by car and more pleasant for pedestrians. Individual businesses, however, may be adversely affected.

Because they would connect to the “old” highway near the western end of the project area, the Juneau Creek and Juneau Creek Variant alternatives could, in addition to affecting businesses in Cooper Landing, also affect two businesses along the “old” highway at approximately MP 51 and MP 52.

Property tax revenues, a major source of funding for the Borough, would be directly affected by these alternatives. Acquisition of private property valued at approximately \$2.4 million for the Juneau Creek Alternative and \$2.3 million for the Juneau Creek Variant Alternative (HDR (2014a); see Table 3.5-4) would result in losses in Borough tax revenue of approximately \$10,800 and \$10,350, respectively.

The Juneau Creek and Juneau Creek Variant alternatives would require acquisition of vacant Borough properties classified for residential development in the Birch and Grouse Ridge Subdivision. Three platted undeveloped residential Borough properties with an assessed total land value total of \$280,200 would be fully acquired, which would result in a loss of future Borough revenue (KPB 2013). Acquisition of private property for the Juneau Creek and Juneau Creek Variant alternatives, valued at approximately \$2.9 and \$2.8 million (HDR 2014a), respectively, would result in an annual loss of Borough tax revenue of approximately \$13,000 and \$12,600.

Estimated annual operations and maintenance costs and project life costs (development, construction, plus O&M and periodic projects through 2043) for the Juneau Creek Alternative are \$608,600/year and \$273.8 million, respectively. Estimated annual operations and maintenance costs and project life costs for the Juneau Creek Variant Alternative are \$611,700/year and \$281.3 million, respectively. These figures do not include maintenance of the remaining 9.1 miles (for the Juneau Creek Alternative) and 8.5 miles (for the Juneau Creek Variant Alternative) of the “Old” Sterling Highway, which DOT&PF would continue to maintain. See Section 3.27.7.5 Cumulative Impacts for a discussion of the remnant highway section costs.

### **Construction Impacts**

Construction of these alternatives may create minor temporary access impacts to a single business located at Quartz Creek Road, near MP 45.

The estimated direct construction cost of the Juneau Creek Alternative is \$206 million. The estimated direct construction cost of the Juneau Creek Variant Alternative is \$212 million.

### **Mitigation**

Signs would be erected at the intersections of the Juneau Creek and Juneau Creek Variant alternatives with the “old” highway to indicate access to the community and to businesses.

## 3.6 Transportation

### 3.6.1 Affected Environment

This section presents information on the current transportation facilities and infrastructure, including the roadway system, transportation safety, aviation, and bicycles and pedestrians. River navigation is addressed in Section 3.8.

#### 3.6.1.1 Roadway System

##### Design Standards

As discussed in Section 1.2.2.2 (Highway Design Standards) of Chapter 1, the American Association of State Highway and Transportation Officials publishes national standards for roadway design (2004). The current and projected conditions for the Sterling Highway in the project area, as discussed in Chapter 1, are not consistent with the design standards of a rural principal arterial. Roadway design elements, such as curves, widths of lanes and shoulders, and areas along the road intended to remain clear for visibility and safety, have deficiencies in the project area. Table 1.2-4 shows the standards and the percentage of the existing Sterling Highway in the project area that meets the standard.

##### Travel Patterns

The Sterling Highway is a major travel corridor for the Kenai Peninsula and provides the only road access to the western Kenai Peninsula. During the peak summer travel season, traffic on the Sterling Highway consists of nearly 17 percent recreational vehicles and 7 percent heavy trucks, with private automobiles making up the majority of the remaining traffic. Two distinct types of drivers use the roadway: (1) the driver who travels the highway frequently and knows the roadway and (2) the occasional traveler who may not be familiar with the roadway. Mixing the two populations during high-traffic periods often causes frustration for the frequent traveler and confusion for the occasional traveler.

Roads or trails that provide access to various areas within the Cooper Landing community and are maintained by the State or the Kenai Peninsula Borough (Borough) are described below and illustrated on Map 3.6-1.

**Sterling Highway.** The Sterling Highway is a paved, State-maintained, two-lane highway that passes through Cooper Landing, connects to the Seward Highway to the east, and continues west to Homer. For more on the conditions of the highway, see Chapter 1.

**Quartz Creek Road.** This secondary gravel, State-maintained (about 3 miles) road provides access from the Sterling Highway to Crescent Lake Trail, Kenai Lake, Quartz Creek



**Recreational users of the Seward Highway use a variety of vehicles, including the occasional school bus with equipment trailer.**

(Photo courtesy of Dan Burden)



Campground, Cooper Landing Airport, home sites, businesses, and U.S. Forest Service (USFS), State, and Borough lands on which mining and recreational activities occur.

**Snug Harbor Road.** This secondary gravel, State-maintained (about 4 miles) road provides access from the Sterling Highway to the eastern end of the Russian Lakes Trail, Cooper Lake, home sites, businesses, churches, senior citizen housing, and USFS, State, and Borough lands on which logging and recreational activities occur.

**Bean Creek Road.** This secondary gravel, State-maintained (about 2 miles) road provides access from the Sterling Highway to home sites, businesses, the Kenai Princess Lodge, the Cooper Landing School, the library, a gun club, Borough lands on which recreational activities occur, and other side roads, including Slaughter Ridge Road.

**Skilak Lake Road.** This secondary gravel, State-maintained road provides access through the Kenai National Wildlife Refuge (KNWR) Skilak Wildlife Recreation Area to Skilak Lake and to other smaller lakes, campgrounds, and multiple trailheads. It is a large loop of road that connects in two places to the Sterling Highway—at Milepost (MP) 58 at the western end of the project area and farther west, beyond the Kenai Mountains and outside the project area. Originally constructed as the Sterling Highway in 1947, the road was left in place when the highway was straightened in the 1980s.

Other small roads in the area include:

**Shackelford Creek Road.** This Borough gravel and dirt road was built for access to wood-cutting areas off Snug Harbor Road and is used principally as a trail.

**Slaughter Ridge Road.** This Borough gravel road was built for access to wood-cutting areas off Bean Creek Road. It has been improved to Borough standards for a short distance to a cul-de-sac; the continuing road transitions into the Bean Creek Trail.

**Cooper Lake Dam Access Road.** This unimproved dirt road leaves the south side of Sterling Highway near MP 49.6. It was created to provide access across Chugach National Forest (CNF) lands for Chugach Electric Association to construct and maintain the Cooper Lake dam. Land near the road's lower end has transferred to the Borough and is open to public use, but it is not a Borough-maintained road. At the current CNF boundary, the road is closed to public use by motorized vehicles, but is used under permit by the dam operators for maintenance and is open to the public for use as a non-motorized trail.

**Russian River Campground Road.** This paved USFS road leads to the Russian River Campground, the western end of Russian River Trail and to Russian River Anglers Trail, and wood-cutting areas off Sterling Highway.

**USFS Logging Roads** (also known as West Juneau Road, Chunkwood Road, and Juneau Bench trails). These gravel roads were built for access to wood-cutting areas off the Sterling Highway, near the trailhead for the Resurrection Pass Trail. The USFS classifies these as roads but closes them to motorized vehicles except snowmobiles in winter.

### **Planned Improvements**

The *2013–2015 Alaska Statewide Transportation Improvement Program* (STIP) (DOT&PF 2013) lays out the Alaska Department of Transportation and Public Facilities' (DOT&PF's) 4-year plan for State-funded and Federally funded transportation improvements. The STIP covers interstate, State, and local highways; bridges; ferries; and public transportation projects that

implement Federal requirements and the DOT&PF's mission and policies, including support of economic development. The DOT&PF coordinates with local governments, Alaska Native Tribes, other State and Federal agencies, and the public to develop the STIP. Projects included in the STIP undergo a competitive selection process and represent the State's top priorities to serve Alaska residents and strengthen the transportation system.

This project, Sterling Highway MP 45–60, is included in the STIP (Need ID 2673), with \$22 million in funding projected for design in Federal Fiscal Year 2015 and \$237 million in funding identified following Federal Fiscal Year 2015.

An interim improvement is a pavement replacement project from MP 45 to MP 60 occurring in 2013/2014, to include resurfacing, improved drainage, new signage, guardrails, and striping (Need ID 24573), with about \$10 million in funding from Federal Fiscal Year 2013. A second interim project will realign the MP 45–46 segment of the Sterling Highway to improve sight distance and safety (Need ID 24837), with \$16 million in funding in Federal Fiscal Years 2014 and 2015. These projects are discussed as part of the cumulative impacts analysis in Section 3.27.

### **Pullouts**

Approximately 24 formal and informal pullouts and parking areas occur within the existing Sterling Highway right-of-way in the project area. See Map 3.6-2 for locations and estimated parking capacities. Most of these areas are not designed to a modern engineering standard, and pullout sizes vary. Estimated parking capacity ranges from two standard vehicles to greater than 30 vehicles, with a cumulative total of about 198 parking spaces for standard vehicles. During busy summer fishing periods, recreationists use some pullouts for parking and overnight camping. Traffic turning onto and off of the highway at pullouts contributes to traffic inefficiency. The pullouts provide a way to accommodate drivers' need for rest or emergency stops on a highway with little or no shoulders, and they help accommodate high demand for recreational parking. The *North and South Sterling Byways Corridor Partnership Plan* (Jensen Yorba Lott, Inc. 2008) prepared for DOT&PF calls for coordination with the Sterling Highway MP 45-60 Project to close some pullouts and create new pullouts. See also Sections 3.2.1.7 and 3.2.7 for information on the plan.

### **Accessibility**

Accessibility is the ease for drivers, pedestrians, and bicyclists to reach their desired destinations from a main highway. The existing Sterling Highway has developed with numerous driveways and side roads connecting directly to the highway, and access has not been controlled. This has contributed substantially to current congestion problems.

Between MP 45 and MP 60, 75 driveways and side roads connect to the Sterling Highway (see Map 1.2-5 in the Purpose and Need chapter). In the most densely settled part of Cooper Landing (approximately between MP 47.0 and MP 51.0), there are 48 driveways and street intersections. This is a density of access points that rivals urban areas, where speed limits are posted below 55 miles per hour (mph) due to these types of conflicts. Allowing multiple access points increases the ability for vehicles to enter and exit the highway. However, multiple access points also decrease the ability of a highway to support through-traffic and can create unsafe conditions.

## **Level of Service**

The travel patterns within the project area, combined with traffic volumes (see Section 1.2.2.1), roadway deficiencies (described in Section 1.2.2.2), and the high number of access points, creates traffic congestion. See Section 1.2.2.1 and Map 1.2-3 for a description of the existing traffic and resulting level of service (LOS) for the existing Sterling Highway.

### **3.6.1.2 Transportation Safety**

The Sterling Highway originally connected settlement points at Cooper Landing to points east and west. The community existed before the highway; however, once the highway was constructed, the community grew around the highway, with several new roads and a multitude of driveways. At the same time, the Borough population grew, and traffic through Cooper Landing bound for other destinations increased. Highway improvements on most of the Seward and Sterling highways accommodated the desires of through-drivers to travel efficiently at consistent highway speeds, but the project area has become a bottleneck for through-traffic.

Ultimately, these changes have led to safety issues. As stated in Chapter 1, Purpose of and Need for the Project, portions of the project area exceed the statewide average crash rate and the statewide average crash severity. The many curves, narrow lanes, lack of shoulders and clear zones, heavy summer recreational traffic, multitude of intersecting side streets and driveways, and lack of passing opportunity that characterize the project area lead to driver frustration, run-off-road crashes (including truck rollovers that have spilled hazardous materials into waters that drain into the Kenai River), head-on collisions, vehicle-wildlife collisions, and pedestrian and bicycle safety issues. These issues are discussed in the Purpose and Need chapter, particularly Sections 1.2.2.2 and 1.2.2.3.

Highway Safety Improvement Program (HSIP) work in 2007/2008 added a flashing light at each end of Gwin's curve (MP 52) and continuous HSIP signing from MP 50–58. To date this appears to have helped in reducing crashes on this S-curve next to the Kenai River. It should be noted that these improvements were intended as an interim measure and not a long-term fix to the risk of crashes as traffic grows. MP 45, which does not rise as high in the HSIP analysis of curves and crashes to warrant a beacon project like that installed at MP 52, will have a combination speed advisory/curve warning sign installed under the HSIP National Highway System Warning and Delineation Project, which systematically addresses sharp curves along all the four main highways: Sterling, Seward, Parks, and Glenn highways (DOT&PF 2010b).

During initial project scoping, the public identified transportation safety as a concern, particularly during winter months. The topography of the project area, with high mountains north and south and a low, east-west valley between them, means that the valley often is shaded from direct sun, particularly in mid-winter when the sun angle is low and limited to a short arc to the south. South-facing mountain slopes at higher elevations generally receive more sun than lower slopes and substantially more sun than north-facing slopes (HDR 2011e). Elevation also affects temperature and may affect precipitation amounts or whether it falls as rain or snow. Shading, temperature, and snow conditions all can affect the road surface conditions and maintenance needs. The potential for poor road conditions during winter months, combined with the current design of the roadway (narrow lanes, curves, and limited shoulders), create the potential for unsafe travel.

### **3.6.1.3 Aviation**

The Quartz Creek Airport, located on Quartz Creek Road (see Map 3.6-1) in Cooper Landing, is a State-owned, 2,200-foot by 60-foot gravel/dirt runway. The Quartz Creek Airport currently averages 38 aircraft operations per month. Three single-engine planes are based on the field. Eighty-nine percent of the aviation activity is transient, and 11 percent is used for local general aviation (AirNav 2011).

Floatplanes can land on Kenai Lake and many backcountry lakes. Most floatplane operations on the lake occur in the project area at the western end of the lake, where there are lake-front residences.

### **3.6.1.4 Pedestrians and Bicycles**

A growing number of pedestrians and bicyclists travel along the Sterling Highway, though there are minimal established pedestrian or bicycle pathways located within the project area, and no shoulders on the Sterling Highway in the project area. There is a short segment of gravel trail within the northern edge of the DOT&PF right-of-way west of the Cooper Landing Bridge and a pedestrian walkway across the bridge.

Pedestrian and bicycle accommodation is very poor in most of Cooper Landing and along the existing highway. During summer, when more people might walk or bicycle and when many recreational visitors are staying in Cooper Landing, the highway traffic also is highest. Pedestrians and cyclists often must wait long periods to cross the highway, and there is little or no space along the highway's edge suitable for walking or bicycling. Motorists passing pedestrians or cyclists on the highway edge have little space to pass safely between the person on the edge and oncoming traffic.

Because of increasing tourism and traffic levels, pedestrian and bicycle safety continues to be an issue of concern for Cooper Landing residents. In April 2010, the *Cooper Landing, Alaska, Walkable Community Project* plan (LDN 2010a) was incorporated into the *Kenai Peninsula Borough Comprehensive Plan* by the Assembly (Ordinance 2010-13). See detail in Section 3.2.1.6 in Land Use Plans and Policies. The *Walkable Community Project* echoed themes found also in the *North and South Sterling Byways Corridor Partnership Plan* (Jensen Yorba Lott, Inc. 2008) for improving the character of the community for walkers and bicyclists, as well as for motorists.

## **3.6.2 Environmental Consequences**

This section describes effects of the project alternatives on the transportation system in the project area. It addresses effects on roadway system travel patterns and accessibility, transportation safety, aviation, and pedestrians and bicycles.

### **3.6.2.1 No Build Alternative**

#### **Direct and Indirect Impacts**

##### ***Roadway System***

*Design Standards:* Under the No Build Alternative, the design of the highway would not change (other than the programmed curve realignment at MP 45 to 46). No other improvements to meet design standards would be constructed.

***Travel Patterns:*** Under the No Build Alternative, travel patterns relative to the existing Sterling Highway would not change. Travel patterns related to secondary roads and other roads would also not change.

***Pullouts:*** All of the approximately 24 existing pullouts and parking areas would continue to exist in the Sterling Highway right-of-way in the project area. No change would be expected to occur. The cumulative total of approximately 198 parking spaces in these pullouts would remain available. Some pullouts do not function well for efficient or safe highway functionality during busy periods, and this circumstance would continue.

***Accessibility:*** Under the No Build Alternative, no changes would be made to the level of access control along the highway, and no improvement would be made to resolve traffic conflict points at intersections with public roads and private driveways. This would be inconsistent with the *Alaska Strategic Traffic Safety Plan* to preserve Alaska’s main roads, which advocates limiting and controlling access for main roads and highways (DOT&PF 2012a). Under the No Build Alternative, the number of access points would likely increase from new development within the community (see Section 3.27.4 for descriptions of future projects in the area).

***Level of Service:*** Under the No Build Alternative, the highway would continue to be congested and to have inadequate capacity to accommodate current and projected future traffic.

Existing conditions and inadequacies would be exacerbated by anticipated growth in traffic. As described in Section 1.2.2.1 (Highway Traffic and Congestion) of Chapter 1, the projected (2043) traffic would result in the entire highway in the 15-mile project area functioning at LOS D (100 percent of the roadway would operate at LOS D (Lounsbury 2014); see Figure 1.2-1 and Map 1.2-3). DOT&PF would like as much of the highway to operate above LOS D as possible. Because the LOS is expected to decline as predicted traffic volumes increase, highway congestion would become a greater issue.

### ***Transportation Safety***

The existing Sterling Highway does not meet current design standards (see Chapter 1), which reduces safety. If no improvements are made, DOT&PF anticipates the rate of deaths and major injuries due to crashes would rise to rank with some of the worst corridors in the State, and the Sterling Highway MP 45–60 would be designated a Highway Safety Corridor by 2043. DOT&PF and the Department of Public Safety are then tasked by law with the responsibility of reducing these crashes. Also, because of poor LOS and a high percentage of the existing highway not meeting current design standards, highway and traffic safety are anticipated to worsen, resulting in a greater possibility of frustrated and erratic drivers taking unnecessary chances when attempting to pass slower traffic, thereby increasing the dangers of head-on collisions.

### ***Aviation***

No aircraft operation impacts are anticipated under the No Build Alternative. The Quartz Creek Airport and floatplane operations on Kenai Lake would be unaffected.

### ***Pedestrians and Bicyclists***

The existing highway would continue to accommodate pedestrians and bicyclists poorly, particularly in the core area of Cooper Landing.

### 3.6.2.2 Issues Applicable to the Build Alternatives

This section describes impact issues common to all of the build alternatives. Although the actual impacts may be somewhat different among the build alternatives, as described in the following alternative-specific subsections, this section presents a summary of impacts and a comparison of alternatives for transportation-related resources.

#### Direct and Indirect Impacts

##### Roadway System

*Design Standards:* Each build alternative would be designed to meet current design standards when practicable. While all build alternatives meet the standards for a rural principal arterial, there is a distinction that can be made between “desirable” levels of meeting the standards, and acceptable or minimum levels. The design speed for this project is 60 mph due to rolling terrain as the alternatives move through the valley and across mountainsides. While all curves meet the minimum standard, some curves can accommodate the more desirable 65 mph speed or higher. These are not indications of the speed limit that would be posted, but of how safe the curves are and how easily drivers can maintain consistent highway speeds. All build alternatives are designed to avoid vertical grades exceeding 6 percent. Table 3.6-1 presents various design factors for each alternative and indicates how well the alternative meets the standard. The table also presents information on passing lanes and intersections, which are not standards, but which help indicate the efficiency of the alternative.

**Table 3.6-1. Build alternative design factor comparison**

	No Build/ Existing	Cooper Creek	G South	Juneau Creek	Juneau Creek Variant
<b>Horizontal Curves<sup>a</sup></b>					
Total number of horizontal curves	43	27	25	21	22
Number of curves meeting minimum curve radius standard for 65 mph	15	23	24	20	21
Number of curves meeting minimum curve radius standard for 60 mph (1,330 feet)	22	27	25	21	22
Number of curves not meeting standards for 60 mph	21	0	0	0	0
<b>Grades</b>					
Percent (%) of length above maximum grade (> 6% grade)	0	0	0	0	0
Percent (%) of length at 5.9-6% grade (steep)	0	9	8	2	0
Percent (%) of length > 5% grade (hilly)	-- <sup>b</sup>	9	14	16	26
<b>Passing Lanes</b>					
Percent (%) of length with passing lane	0	29	26	42	39
<b>Intersections</b>					
Number of intersections of side roads and driveways	75	42	20	11	11

<sup>a</sup> The design speed criterion for this project is 60 mph. It is desirable to design curves to handle higher speeds, and much of the build alternatives are capable of 65 mph or more. The No Build/Existing was analyzed using these modern design standards.

<sup>b</sup> No as-built data are available for detailed vertical grade analyses on the existing highway. There may be short segments above 5% within the existing alignment.

*Travel Patterns:* Data compiled in the Sterling Highway, Alaska, Origin-Destination Study (TSI 2001) indicate that under any of the four build alternatives, 30 percent of traffic would continue to travel through town rather than taking the new alignment. Interpretation of the data provided in the Origin-Destination Study suggests that vehicles that stop for fewer than 2 hours (6 percent of vehicles surveyed) and a portion of vehicles that stop for more than 2 hours (31 percent of vehicles surveyed) would be less likely to travel into Cooper Landing if any of the alternatives were available. Some of these travelers, who currently do stop in and around Cooper Landing, may change their travel patterns in favor of more direct travel and fewer stops.

Overall, the build alternatives are not expected to change traffic volumes traveling east and west, the overall traffic volume, traffic growth rate, or the mix of vehicle types. The build alternatives, however, would remove through-traffic (estimated at 70 percent of all traffic) from all or a portion of the commercial area of Cooper Landing (approximately MP 47 to 50) and from all or a portion of the primary recreation corridor (approximately MP 50 to 55). The new alignment under each alternative would leave a portion of this area as the “Old Sterling Highway,” where there would be less traffic than there is today.

*Maintenance:* Although the build alternatives would not physically alter the segment of “Old Sterling Highway” under each alternative, maintenance and operation of the “old highway” through Cooper Landing and through the primary recreation corridor would remain the responsibility of DOT&PF. Maintenance priority for tasks such as snow plowing would remain with the main highway (the new alternative), and the “old” segment would have somewhat lower priority than it has today.

*Pullouts:* Each of the build alternatives would result in a reduced number of pullouts in the project corridor. None of the informal pullouts along the segment of “old” highway would be affected. However, wherever the existing alignment was reconstructed, existing informal pullouts would be eliminated, with two exceptions. Under every alternative, the pullout and parking area for Fuller Lakes Trail (#22 on Map 3.6-2; approximately MP 57.1) would remain, as would the parking lot for the KNWR visitor contact station (#24, approximately MP 57.9). In general, new shoulders would provide space for emergency stopping needs, so the existing pullouts would not be needed for this purpose. Where the build alternatives would be constructed on new alignment, DOT&PF plans to control access. No new driveways or pullouts would be permitted in these areas, other than the following pullouts planned for access to recreation:

- Cooper Creek Alternative: Stetson Creek Trail pullout in the right-of-way.
- G South Alternative: Bean Creek Trail pullout in the right-of-way, and separate summer parking lot outside the right-of-way.
- Juneau Creek alternatives: Bean Creek Trail pullout in the right-of-way, and separate summer parking lot for Resurrection Pass Trail outside the right-of-way.

Table 3.6-2 shows the changes in pullouts and associated parking spaces.

While this project would not alter existing pullouts on the “old” highway segments, removing 70 percent of traffic on the “old” highway would make these pullouts easier and safer to use.

Although the methods applied to removing or adding pullouts are consistent, the impacts differ by build alternative because each alternative would reconstruct a different length of the existing highway alignment. Therefore, more pullouts would be eliminated under the Cooper Creek and



G South alternatives, which would use greater lengths of the existing highway than the Juneau Creek alternatives.

**Table 3.6-2. Pullouts along the build alternatives**

	<b>No Build/ Existing</b>	<b>Cooper Creek</b>	<b>G South</b>	<b>Juneau Cr.</b>	<b>Juneau Cr. Variant</b>
<b>Pullouts</b> ( <i>total number of existing pullouts is 24<sup>a</sup></i> )					
Existing pullouts eliminated <i>(with reference to specific pullouts numbered on the map)</i>	0	16 <i>Map: 1-5, 12-21, &amp; 23</i>	12 <i>Map: 1, 12-21&amp; 23</i>	4 <i>Map: 1, 20, 21, 23</i>	4 <i>Map: 1, 20, 21, 23.</i>
Existing pullouts remaining <sup>b</sup> <i>(with reference to specific pullouts numbered on the map)</i>	24	8 <i>Map: 6-11, 22, &amp; 24)</i>	12 <i>Map: 2-11, 22 &amp; 24</i>	20 <i>Map: 2-19, 22 &amp; 24</i>	20 <i>Map: 2-19, 22, &amp; 24</i>
New pullouts/parking provided	0	1 <i>Stetson Cr, Tr.</i>	2 <i>Bean Cr. Tr. pullout &amp; parking area</i>	2 <i>Bean Cr. Tr. pullout &amp; Resurrection Tr. parking lot</i>	2 <i>Bean Cr. Tr. pullout &amp; Resurrection Tr. parking lot</i>
<b>Parking spaces within pullouts</b> ( <i>approximate number of existing parking spaces within pullouts is 198</i> )					
Existing informal parking spaces eliminated	0	123	108	54	54
Existing informal parking spaces remaining	198	75	90	144	144
New formal parking spaces provided	NA	Total=15 <i>Stetson Cr. Tr. pullout (capacity 15)</i>	Total=45 <i>Bean Cr. Tr. pullout (capacity 15) &amp; parking area (capacity 30)</i>	Total=64 <i>Bean Cr. Tr. pullout (capacity 15) and Resurrection Tr. parking area (capacity 49)</i>	Total=64 <i>Bean Cr. Tr. pullout (capacity 15) and Resurrection Tr. parking area (capacity 49)</i>

<sup>a</sup> Pullouts within the right-of-way of the existing Sterling Highway. This includes a formal parking lot for the KNWR visitor contact station (#24 on Map 3.6-2).

<sup>b</sup> This row mostly represents existing pullouts that would remain along the unaffected segment of the “Old Sterling Highway.” Segments in which the existing alignment would be rebuilt would eliminate existing pullouts, with the exception of the pullout at Fuller Creek Trail (#22 on Map 3.6-2) and KNWR visitor contact station (#24).

**Accessibility:** Under all the build alternatives, accessibility for Cooper Landing businesses and residents along the “Old Sterling Highway” is expected to improve due to the shift of through traffic to a new alignment.

Roads in the project area that extend from the Sterling Highway to developed areas, recreational destinations, or areas managed for habitat and forestry purposes by CNF and that would be affected by the build alternatives are shown on Map 3.6-3. Within the project area, existing intersection conflict points would either be improved or remain the same, depending on the point that a build alternative leaves or re-joins the “Old Sterling Highway.” Table 3.6-3 identifies what would occur under each build alternative for each conflict point.

Under each build alternative, DOT&PF would create a “controlled access” facility on the segment of each alternative built on new alignment. DOT&PF would acquire access rights and would formally plat and record these access rights with the Borough. This would mean that no public roads or private driveways would be connected directly to the new segments of roadway. DOT&PF examined the need for intermediate access points, including points where the new alignments cross existing or platted roads and the potential for access on section line easements. It was determined there was no need for direct access from the new highway that could not be served from the existing highway. Roads intersected by “new highway” segments of each alternative would be crossed with overpasses (bridges or large culverts) to maintain continuity and to allow access for potential future development or use. Any future additions or changes to access must be submitted by DOT&PF to FHWA for approval. Requiring this level of review would prevent induced growth from compromising the functionality of the highway facility and would direct local access needs to the local road system.

Many section lines on State and Borough lands have easements along them, meaning the government or the public may have rights to use them for roads and utilities. Because there are no current plans identifying roads needing to use the section line easements in the project area, and because alternate access exists in these areas via existing and platted roads, DOT&PF is not planning any overpasses or underpasses of these easements and no highway ramps or other access points have been designated for section line easements. The only planned driveway connections from the new highway are those associated directly with the project (one or two pullouts or trailheads for each alternative).

**Table 3.6-3. Impacts of alternatives on existing intersection conflict points**

Major Intersections	Approximate Milepost	No Build	Cooper Creek	G South	Juneau Creek	Juneau Cr Variant
Sunrise Inn	44.8	●	■	■	■	■
Quartz Creek Road	44.9	●	■	■	■	■
Cooper Landing driveways north of Kenai River	47.5–47.7	●	■	★	★	★
Bean Creek Road	47.7	●	■	★	★	★
Snug Harbor Road	48	●	■	★	★	★
Cooper Landing driveways south of Kenai River	48–49.4	●	★	★	★	★
Cooper Landing driveways—west end of Cooper Landing	49.8–50.3	●	★	★	★	★
Cooper Creek Campground	50.9	●	★	★	★	★
Gwin's Lodge	52.0	●	■	■	★	★
Russian River Campground/K'Beq	52.7	●	■	■	★	★
Resurrection Pass Trail	53.1	●	■	■	New TH	New TH
Sportsman's Landing/Ferry	54.9	●	■	■	★	■ <sup>a</sup>
Fuller Lakes Trail	57.4	●	■	■	■	■
KNWR Visitor Contact Station	58.5	●	■	■	■	■
Skilak Lake Road/Jim's Landing	58.7	●	■	■	■	■
Total number of intersections and driveways	NA	75	42	20	11	11

● = Existing conflict does not change; driveway/side road directly connecting to highway slows traffic and is a safety concern.

■ = Physical changes to intersection such as turn lanes, wider shoulders, better sight distances, and driveway/side road consolidation improves function and safety.

★ = No physical changes to intersection; 70% of through-traffic avoids conflict point due to new road alignment; reduced traffic in this area improves function and safety.

**New TH:** The Juneau Creek and Juneau Creek Variant alternatives would create a new trailhead at their crossing of the Resurrection Pass National Recreation Trail, so the traffic impact of an intersection would exist, but it would be similar to the “improved” intersections (squares), built to current standards.

<sup>a</sup> The Juneau Creek Variant Alternative would avoid direct connection to the Sportsman's Landing driveway, but the driveway would be improved on the old highway as part of an overall configuration of the old highway and the new highway in the immediate area of the driveway.

Note: This table addresses existing intersections. Each alternative also would have two new intersections with the “Old Sterling Highway.”

**Level of Service:** All build alternatives offer traffic improvements when compared to the existing alignment. The highway’s capacity to accommodate current and projected traffic volumes would be increased, and therefore the road segment LOS would be improved. The improved LOS achieved by all build alternatives would be due to the separation of through-traffic and local traffic, improved highway geometry, and additional passing opportunities (*HDR 2008a*). As a result of improved traffic flow, travelers would benefit from reduced travel times. With less congestion and less delay, vehicles would be able to travel more quickly and safely through the project area. Specific LOS improvements for each build alternative are discussed in the sections below.

All intersection movements are expected to operate at an acceptable LOS for all alternatives. For local travel within Cooper Landing and at recreational facilities, all build alternatives would lead to improved opportunities for turning on and off the highway by reducing traffic on the “old highway.” Where the build alternatives construct on new alignment, the intersections at locations that would become the “old” Sterling Highway result in mainly LOS A (see Table 3.6-4). In these ways, all build alternatives would better accommodate both through-traffic and traffic bound for local destinations.

**Table 3.6-4. Intersection LOS comparison (2043)**

<b>Sterling Highway intersection</b>	<b>No Build/ Existing</b>	<b>Cooper Creek</b>	<b>G South</b>	<b>Juneau Creek</b>	<b>Juneau Creek Variant</b>
New Sterling Highway/Old Sterling Highway (MP46.3)	N/A	N/A	C	C	C
Bean Creek (north)	C	C	B	B	B
Bean Creek (south)	B	C	A	A	A
Snug Harbor Rd	B	C	A	A	A
King Salmon Dr (Kenai River boat launch)	B	A	A	A	A
Towle Cir (Hamilton’s Place)	B	A	A	A	A
New Sterling Highway/Old Sterling Highway (MP 51)	N/A	B	B	N/A	N/A
New Sterling Highway/Old Sterling Highway (MP 55)	N/A	N/A	N/A	B	B
New Sterling Highway/Old Sterling Highway (MP46.3)	N/A	N/A	N/A	2	0

**Transportation Safety:** The existing Sterling Highway does not meet current design standards (see Chapter 1), which reduces safety. Roadway improvements implemented as part of the project are anticipated to reduce the rate of crashes in the project area under all build alternatives by separating local traffic, which makes frequent stops and turns, from faster moving through-traffic in a portion of the project area. The portion with separated traffic varies by alternative. For each build alternative, the entire alternative would be built to current rural principal arterial geometric standards as described in Chapter 2.

Also, as a result of improving the highway to rural principal arterial standards, the driving experience would be made similar to the experience on adjacent sections of the Sterling Highway. When driving conditions are standardized along a roadway, drivers know better what

to expect, can anticipate changes in traffic, and are more able to respond to potential hazards. Therefore, the improved continuity of the roadway would improve safety. Based on improvements anticipated in the highway design throughout any of the alternatives, a 65 percent reduction in the projected crash rate is expected. While crash rates are anticipated to be reduced, however, the higher travel speeds may make resultant crashes more severe.

A shadow analysis was performed for all build alternatives (HDR 2011e). Generally, the alternatives located on the north side of the Kenai River valley (a portion of the G South, Juneau Creek, and Juneau Creek Variant alternatives) with south-facing exposure would receive more sun than alternatives located to the south (i.e., Cooper Creek Alternative and a portion of G South Alternative) with north-facing exposure and in the shadow of mountains. Less road icing may occur on the alternatives with greater sun exposure than on the existing highway. Generally, at any given elevation, it is likely that snow and ice would melt off sooner on south-facing slopes than on north-facing slopes. These factors should enhance highway safety. However, factors such as elevation of alternatives and other physical conditions (such as wind exposure) can affect road conditions relative to snow and ice formation, so none of the build alternatives are expected to stand out as dramatically more or less safe as a result of environmental factors.

### ***Aviation***

No permanent aircraft operation impacts are anticipated under any of the build alternatives. The Quartz Creek Airport and floatplane operations on Kenai Lake and access to the facility would be unaffected.

### ***Pedestrians and Bicycles***

Each alternative would have 8-foot shoulders and would better accommodate bicyclists than the Sterling Highway does today, with more room to maneuver and greater safety. Cyclists wishing to stay in the Cooper Landing area could use the old highway, which would remain without substantial shoulders but would have lower traffic volumes. Overall, connectivity for bicyclists would be improved in the project area by providing wide shoulders throughout the length of each alternative.

## **Construction Issues**

### ***Roadway System***

For all alternatives, construction would occur over three to four construction seasons, with some ongoing work possible year round. As described below under Mitigation, construction would be accomplished under a Traffic Control Plan to reduce the temporary impacts on traffic and circulation. Impacts could include localized congestion, traffic delays, and queuing during construction. Also, short detours would occur. Use of pilot cars through construction zones is likely, and short-duration nighttime closures may be necessary.

Movement of construction materials would result in increases in truck traffic through Cooper Landing, which could further exacerbate already-congested conditions. Assuming that the contractor uses a typical dump truck that can haul 10–12 cubic yards of material, there could be 20 trucks hauling 10 loads (200 truckloads) each day in the project area during construction periods (primarily snow-free times).

Use of staging, material extraction, and material disposal sites would be temporary, occurring during construction. Access to many of these areas would be from the new alignment and

internal to the project, without affecting existing roads. Construction-related truck traffic on the existing Sterling Highway and possibly on other existing minor roads would occur.

### ***Aviation***

The operation of aircraft at Quartz Creek Airport would be unaffected by construction, although ground access to the airport could be altered or affected during construction. The contractor would be required to provide access to the Quartz Creek area, including the airport. Minor delays in access could occur during some phases of construction, such as driveway rebuilding and paving efforts. The contractor would submit a notice of construction activity to the Federal Aviation Administration to ensure that construction was compatible with aviation activities and that cranes or other obstructions to airspace were located far enough away to avoid impact to aircraft using the airport (the nearest use of cranes would likely be at Cooper Landing Bridge under the Cooper Creek Alternative [3 miles from the airport] and Juneau Creek Bridge sites for the G South Alternative [5 miles] and both Juneau Creek alternatives [6 miles]).

### ***Pedestrians and Bicyclists***

Construction of the build alternatives would have no impact on pedestrians and bicyclists along the “Old Sterling Highway.” Minor disturbances may occur at points where the new alignments leave or rejoin the “Old Sterling Highway.” Temporary detours would be required where new alignments cross existing trails. Those impacts are discussed in Section 3.8, Park and Recreation Resources, and Section 4(f).

### ***Mitigation***

Construction of any of the build alternatives has the potential to impact transportation, travel patterns, and accessibility through the project area. To reduce the number and magnitude of such impacts, the contractor would consult with local businesses and land management agencies to create a Traffic Control Plan. The Traffic Control Plan would preemptively outline detours and other traffic modification strategies to ensure that access to businesses was retained, delays were minimized, and traffic flow was maintained throughout the project corridor during construction.

To further reduce construction impacts, construction activities that conflict with access would be scheduled outside high-use summer periods, to the extent possible. In addition, notification of any construction activities and potential road closures would be given well in advance. Of particular concern is access to popular recreation sites in the area. DOT&PF would closely coordinate with the land and resource management agencies during the design phase to ensure access and operational concerns associated with popular recreation sites are reflected in construction plans and specifications. For instance, special attention would be given to minimizing impacts to access and use of the Sportsman’s Landing-Russian River Ferry, the U.S. Fish and Wildlife Service (USFWS) visitor contact station, the Fuller Lakes Trailhead, USFS campgrounds and trails, and the turn onto Skilak Lake Road/Jim’s Landing during highway construction.

### **3.6.2.3 Cooper Creek Alternative**

#### **Direct and Indirect Impacts**

##### ***Accessibility***

The Cooper Creek Alternative would relieve congestion through the portion of the Cooper Landing central business district and would provide improved traffic flow for through-traffic from Snug Harbor Road west to about MP 52 by routing most through-traffic to the south on a new alignment (see Map 3.6-4). Even though through-traffic would bypass this portion of Cooper Landing, there are several facilities that would be affected by access changes. Under this alternative, several measures would help facilitate orderly access to these facilities while maintaining the flow of through-traffic including:

- Construction of turning lanes at Sportsman's Landing (MP 55)
- Construction of turning lanes at the entrance to the Russian River Campground (MP 52.7)
- Construction of turning lanes at Snug Harbor Road and the existing Sterling Highway (MP 48)
- Construction of a T-shaped intersection with turning lanes at Bean Creek Road (MP 47.6)

A trailhead access pullout would be established for the Stetson Creek Trail on the Cooper Creek Alternative near where the new alignment would cross the Stetson Creek Trail (see Chapter 4 for detail).

##### ***Level of Service***

The amount of traffic accessing facilities on the existing Sterling Highway during the height of summer would continue to contribute to variable traffic speeds and delays. The LOS would be an improvement over current conditions. The Cooper Creek Alternative would be designed to accommodate the projected increase in traffic forecasted for 2043. Passing lanes would be provided for both eastbound and westbound traffic in many sections, which would contribute to this improved LOS. Map 3.6-4 shows the LOS for both directions of travel and intersections. Table 3.6-5 reports the levels of service for the various segments and reports the LOS as a percentage of the entire alternative length. The Cooper Creek Alternative would result in a greater percentage of the total roadway functioning above LOS D (60.8%) than under the existing conditions (0%). Furthermore, the segment of existing roadway that would be bypassed would completely operate at LOS C because of reduced traffic volumes.



**Table 3.6-5. Level of service – Cooper Creek Alternative, 2043**

Segment	Direction	% of Total Length <sup>a</sup>	Level of Service <sup>b</sup>
1	Eastbound	7.3	D
	Westbound	7.3	C
2	Eastbound	5.1	D
	Westbound	5.1	C
3	Eastbound	7.3	C
	Westbound	7.3	C
4	Eastbound	3.6	C
	Westbound	3.6	C
5	Eastbound	16.4	D
	Westbound	16.4	C
6	Eastbound	10.2	D
	Westbound	10.2	C

<sup>a</sup> The project area is about 15 miles long. “Total Length” includes both directions of travel and therefore is approximately 30 miles.

<sup>b</sup> Level of service is a term used to describe roadway operations using letter grades ranging from A (best) to F (worst). See definition in Section 1.2.2.1. Source: Lounsbury (2014). Note that in the Lounsbury report, Tables 21A and 21B, the segments are numbered in the opposite order from those in this SEIS.

## **Construction Impacts**

This alternative follows the existing highway from MP 45 to 47.8 and MP 51.3 to 60. Approximately 11.5 of 15 miles of the existing highway would be rebuilt, meaning that pavement would be removed, the earth embankment and side slopes would be reconfigured using heavy equipment, and new pavement would be placed. During this process, drivers on the affected portions would be re-routed onto temporary gravel lanes and subject to delays while waiting for a pilot car. The remaining 3.5 miles of the existing highway, including the western portion of the Cooper Landing community, would not be rebuilt but likely would experience some construction-related traffic (e.g., dump trucks hauling gravel).

The two bridge replacements on the existing highway alignment would contribute to potential construction-related impacts:

- **Cooper Landing Bridge Replacement.** It would likely take two construction seasons to build the replacement bridge and remove the existing bridge. Traffic would be accommodated during construction either on the existing bridge or on an adjacent temporary bridge, but would sometimes experience delays or need to follow a pilot car.
- **Schooner Bend Bridge Replacement.** Construction of the new bridge and demolition of the existing bridge is expected to take two construction seasons. Traffic would be accommodated during construction on the existing bridge, and the old bridge would not be removed until the new bridge was in use. However, vehicles might experience delays in the bridge construction area.

Floatplane take-off and landing operations at the mouth of Kenai Lake could be affected by construction of the replacement Cooper Landing Bridge. Cranes used to drive pilings, remove temporary pilings, and place bridge girders would extend much higher than is common in the area, creating a potential obstruction for aircraft.

Construction of the Cooper Creek Alternative would create river restrictions and closures associated with construction of these bridges. Construction of the Cooper Landing Bridge would require closures and timing restrictions at the Cooper Landing Boat Launch. Restrictions at the Schooner Bend Bridge would be for boaters passing under the old and the new bridge sites.

Construction activity associated with the Cooper Creek Alternative would require temporary closure of the Cooper Lake Dam Road, which would temporarily limit access for USFS and Chugach Electric Association to maintain Cooper Lake Dam and Stetson Creek diversion pipeline facilities.

### **Mitigation**

Mitigation and commitments common to construction of all alternatives are described above in Section 3.6.2.2. Mitigation specifically related to construction of the Cooper Creek Alternative is detailed below.

- **Sportsman's Landing and the Russian River Ferry Facilities.** The construction contractor would be required to maintain public access to Sportsman's Landing and the Russian River Ferry facilities during the summer high-use period. For the Cooper Creek Alternative, temporary use of the northern edge of the parcel would occur without closure of the access road. Any temporary closure during placement of fill or pavement across the entrance would be limited to low-use periods at night and outside the prime fishing season. Notice of closures would be given to area land management agencies (USFWS, USFS, Alaska Department of Fish and Game [ADF&G], Alaska Department of Parks and Outdoor Recreation [DPOR]/Kenai River Center), posted on site, posted in nearby public buildings, and published in Anchorage and Kenai Peninsula newspapers and posted on DOT&PF's construction web site ([www.alaskanavigator.org](http://www.alaskanavigator.org)).
- **Cooper Landing Boat Launch and Day Use Area.** Temporary impacts to the boat launch ramp would be minimized by requiring construction contractors to stage construction elsewhere unless absolutely required on the boat launch ramp for construction immediately adjacent to the ramp. Access to the day use area and boat launch ramp would be retained during the peak summer use season (approximately June 15–August 15). If the entire area were closed for brief periods in spring/early summer or in late summer/fall, notice of intent to temporarily close the ramp would be given to permitted Kenai River guides and land management agencies; posted on site and at area campgrounds and other boat launch ramps; and published in Anchorage and Kenai Peninsula newspapers. The provision of temporary boat ramp facilities was discussed with Kenai River Special Management Area managers but no suitable location was identified. Further consultation with the DPOR would be undertaken to determine if a reasonable site could be located on public or private land.
- **Cooper Lake Dam Road.** The construction contractor would be required to coordinate temporary closures with the USFS and Chugach Electric Association. Temporary closures would be timed to avoid conflicts with dam or pipeline maintenance.

- **Other Recreation Facilities.** Access to Russian River Campground, K’Beq Heritage Site, Resurrection Pass Trail and Fuller Lakes Trail, the KNWR visitor contact station, and the turn onto Skilak Lake Road/Jim’s Landing may be impacted during construction activities. To minimize any impacts, primary construction activities that conflict with access would be scheduled outside high-use summer periods, to the extent possible. Access would be maintained except for short closures at less active times.
- **Cooper Landing Bridge and Schooner Bend Bridge.** The two bridge replacements over the Kenai River (the Cooper Landing Bridge and Schooner Bend Bridge) would contribute to potential construction-related impacts. It would likely take two construction seasons to build the replacement bridges and remove the existing bridges. Traffic would be accommodated during construction either on the existing bridge or on an adjacent temporary bridge.
- **Airport Operations.** To lessen the impact of the presence of the cranes relative to airport operations, the contractor would be required to light and flag the cranes to enhance visibility and to submit a notice of construction activity to the Federal Aviation Administration to ensure that construction is compatible with aviation activities.

#### **3.6.2.4 G South Alternative**

##### **Direct and Indirect Impacts**

###### ***Accessibility***

The G South Alternative would relieve congestion through the entire Cooper Landing central business district and would provide improved traffic flow for through-traffic by routing most through-traffic to the north. Even though most through-traffic would drive around Cooper Landing, all traffic would be combined in the area farther west where there are a number of facilities (campgrounds, trail heads, boat launch ramps, and interpretive sites) that would be affected by changes to their access. Under this alternative, the following measures would help to provide for orderly access to these facilities while maintaining the flow of through-traffic:

- Construction of east- and west-bound turning lanes at Sportsman’s Landing (MP 55)
- Construction of east- and west-bound turning lanes at the entrance to the Russian River Campground (MP 52.7)

A new trailhead access point would be established near where the G South Alternative crosses the Bean Creek Trail to provide better access (see Chapter 4 for detail).

###### ***Level of Service***

The amount of traffic accessing these facilities during the height of summer would continue to contribute to variable traffic speeds and delays for through-traffic. The LOS would be an improvement over current conditions. The G South Alternative would be designed to accommodate the projected increase in traffic forecasted for 2043. Passing lanes would be provided for both eastbound and westbound traffic in many sections, which would contribute to this improved LOS. Map 3.6-5 shows the LOS for both directions of travel and intersections. Table 3.6-6 reports the levels of service for the various segments and reports the LOS as a percentage of the entire alternative length. The G South Alternative would result in a greater percentage of the total roadway functioning above LOS D (69.2%) than under the existing

conditions (0%). Furthermore, the segment of existing roadway that would be bypassed would completely operate at LOS C because of reduced traffic volumes.

**Table 3.6-6. Level of service – G South Alternative, 2043**

Segment	Direction	% of Total Length <sup>a</sup>	Level of Service <sup>b</sup>
1	Eastbound	6.6	D
	Westbound	6.6	C
2	Eastbound	4.0	C
	Westbound	4.0	B
3	Eastbound	11.6	C
	Westbound	11.6	B
4	Eastbound	3.6	C
	Westbound	3.6	B
5	Eastbound	14.9	D
	Westbound	14.9	C
6	Eastbound	9.3	D
	Westbound	9.3	C

<sup>a</sup> The project area is about 15 miles long. "Total Length" includes both directions of travel and therefore is approximately 30 miles.

<sup>b</sup> Level of service is a term used to describe roadway operations using letter grades ranging from A (best) to F (worst). See definition in Section 1.2.2.1.

Source: Lounsbury (2014). Note that in the Lounsbury report, Tables 21A and 21B, the segments are numbered in the opposite order from those in this SEIS.

## Construction Impacts

The G South Alternative follows the existing alignment from MP 45 to 46.3 and MP 51.9 to 60. Approximately 9.4 of 15 miles of the existing highway would be rebuilt, meaning that pavement would be removed, the earth embankment and side slopes would be reconfigured using heavy equipment, and new pavement would be placed. During this process, drivers on the affected portions would be re-routed onto temporary gravel lanes and subject to delays while waiting for a pilot car. The remaining 5.6 miles of the existing highway, in the area of the Cooper Landing community, would not be rebuilt but would experience construction-related traffic (e.g., dump trucks hauling gravel).

Schooner Bend Bridge would need to be replaced. Construction of the new bridge and demolition of the existing bridge is expected to take two construction seasons. Traffic would be accommodated during construction on the existing bridge, and the old bridge would not be removed until the new bridge was in use. However, vehicles might experience delays in the bridge construction area.

Construction of the G South Alternative would create river restrictions and closures associated with construction of a new bridge over the Kenai River west of Juneau Creek, and with replacement of the Schooner Bend Bridge.

## **Mitigation**

Mitigation and commitments common to construction of all alternatives is described above in Section 3.6.2.2. Mitigation specifically related to construction of the G South Alternative is detailed below.

- **Sportsman’s Landing and the Russian River Ferry Facilities.** Under the G South Alternative, the construction contractor would be required to maintain public access to Sportsman’s Landing and the Russian River Ferry facilities. Temporary use of the edge of the northern edge of the parcel would occur without closure of the access road. Any temporary closure during placement of fill or pavement across the entrance would be limited to low-use periods at night and outside the prime fishing season. Notice of any closure would be given to area land management agencies (USFWS, USFS, ADF&G, DPOR/Kenai River Center), posted on site, posted in nearby public buildings, and published in Anchorage and Kenai Peninsula newspapers.
- **Other Recreation Facilities.** Access to Russian River Campground, K’Beq Heritage Site, Resurrection Pass Trail and Fuller Lakes Trail, the KNR visitor contact station, and the turn onto Skilak Lake Road/Jim’s Landing may be impacted during construction activities. To minimize any impacts, primary construction activities that conflict with access would be scheduled outside high-use summer periods, to the extent possible. Access would be maintained except for short closures at less active times.
- **Schooner Bend Bridge.** The Schooner Bend Bridge replacement on the existing highway alignment would contribute to potential construction-related impacts. Traffic would be accommodated during construction either on the existing bridge or on an adjacent temporary bridge. The pilings for the spans of the temporary construction bridge would be placed to allow for continued navigation of the river, and sufficient vertical clearance would be provided on the temporary bridges and the permanent bridges for ease of navigation.

### **3.6.2.5 Juneau Creek and Juneau Creek Variant Alternatives**

#### **Direct and Indirect Impacts**

##### ***Accessibility***

The Juneau Creek and Juneau Creek Variant alternatives would create a new corridor north of the existing roadway between MP 46.3 and 55.6 (Juneau Creek Alternative) or MP 55 (Juneau Creek Variant Alternative) and would route through-traffic around the most congested sections of the existing highway, including the Cooper Landing central business district and many recreational facilities, which would result in a more consistent flow of through-traffic at typical highway speeds. Traffic destined for Cooper Landing or the many recreational facilities located along the Kenai River would use the “old” highway and would encounter much lower traffic volumes. The “old” highway would remain a winding, lower-speed road suitable for access to the Kenai River and the core recreation area.

A remnant logging road on the east side of Bean Creek would be crossed by the Juneau Creek and Juneau Creek Variant alternatives. Approximately 300 feet of logging road would be bisected. The bisected portion north of the proposed alignment disappears where the terrain gets steep along base of the mountains.

These alternatives would provide a pullout to access the Bean Creek Trail and new access to the Resurrection Pass National Recreation Trail by the construction of a new trailhead near the crossing of the trail. This new trailhead would be built in close coordination with the USFS (see Chapter 4 for details).

The Juneau Creek and Juneau Creek Variant alternatives are the only alternatives that provide through-traffic a means to bypass Sportsman's Landing. This area can become busy and congested during peak salmon fishing season. The Juneau Creek Alternative would tie into the "old" highway west of Sportsman's Landing, while the Juneau Creek Variant Alternative would bridge over the "old" highway bypassing Sportsman's Landing, creating an intersection on the north side of the new highway to allow access to Sportsman's Landing. Both alternatives would provide access to Sportsman's Landing via the "Old" Sterling Highway. Under the Juneau Creek Variant Alternative, the "old" highway and the Sportsman's Landing driveway would be slightly realigned.

### ***Level of Service***

The Juneau Creek and Juneau Creek Variant Alternatives would be designed to accommodate the projected increase in traffic forecasted for 2043. Passing lanes would be provided for both eastbound and westbound traffic in many sections, which would contribute to this improved LOS. Map 3.6-6 and Map 3.6-7 shows the LOS for both directions of travel and intersections for these two alternatives.

Table 3.6-7 reports the levels of service for the various segments and reports the LOS as a percentage of the entire alternative length. The Juneau Creek and Juneau Creek Variant alternatives would result in a greater percentage of the total roadway functioning above LOS D (83.2% and 82%, respectively) than under the existing conditions (0%). Furthermore, the segment of existing roadway that would be bypassed would completely operate at LOS C because of reduced traffic volumes.

**Table 3.6-7. Level of service – Juneau Creek Alternatives, 2043**

Segment	Direction	Juneau Creek Alternative		Juneau Creek Variant Alternative	
		% of Total Length <sup>a</sup>	Level of Service <sup>b</sup>	% of Total Length <sup>a</sup>	Level of Service <sup>b</sup>
1	Eastbound	7.0	D	7.5	D
	Westbound	7.0	C	7.5	C
2	Eastbound	4.2	C	4.5	C
	Westbound	4.2	B	4.5	B
3	Eastbound	4.5	C	4.9	C
	Westbound	4.5	B	4.9	B
4	Eastbound	10.5	C	11.3	C
	Westbound	10.5	C	11.3	C
5	Eastbound	14.0	C	11.3	C
	Westbound	14.0	C	11.3	C
6	Eastbound	9.8	D	10.5	D
	Westbound	9.8	C	10.5	C

<sup>a</sup> The project area is about 15 miles long. “Total Length” includes both directions of travel and therefore is approximately 30 miles.

<sup>b</sup> Level of service is a term used to describe roadway operations using letter grades ranging from A (best) to F (worst). See definition in Section 1.2.2.1.

Source: Lounsbury (2014). Note that in the Lounsbury report, Tables 21A and 21B, the segments are numbered in the opposite order from those in this SEIS.

## **Construction Impacts**

The Juneau Creek alternatives would follow a portion of the 15-mile length of existing highway in the project area, as follows:

- Juneau Creek Alternative: MP 45 to approximately MP 46.3 and MP 55.8 to MP 60, for a total of 5.5 miles.
- Juneau Creek Variant Alternative: MP 45 to approximately 46.3 and MP 55 to MP 60, for a total of 6.3 miles.

Approximately 5.5 and 6.3 miles, respectively, of the existing highway would be rebuilt under the Juneau Creek and the Juneau Creek Variant alternatives, meaning that pavement would be removed, the earth embankment and side slopes would be reconfigured using heavy equipment, and new pavement would be placed. During this process, drivers on the affected portions would be re-routed onto temporary gravel lanes and subject to delays while waiting for a pilot car. The remaining 9.5 and 8.7 miles of the existing highway, in an area encompassing virtually all of the Cooper Landing community and recreation sites westward to Sportsman’s Landing, would not be rebuilt but would experience some construction-related traffic (for example, dump trucks hauling gravel).

These alternatives would not include new construction or replacement of any bridges on the existing highway alignment, minimizing traffic impacts.

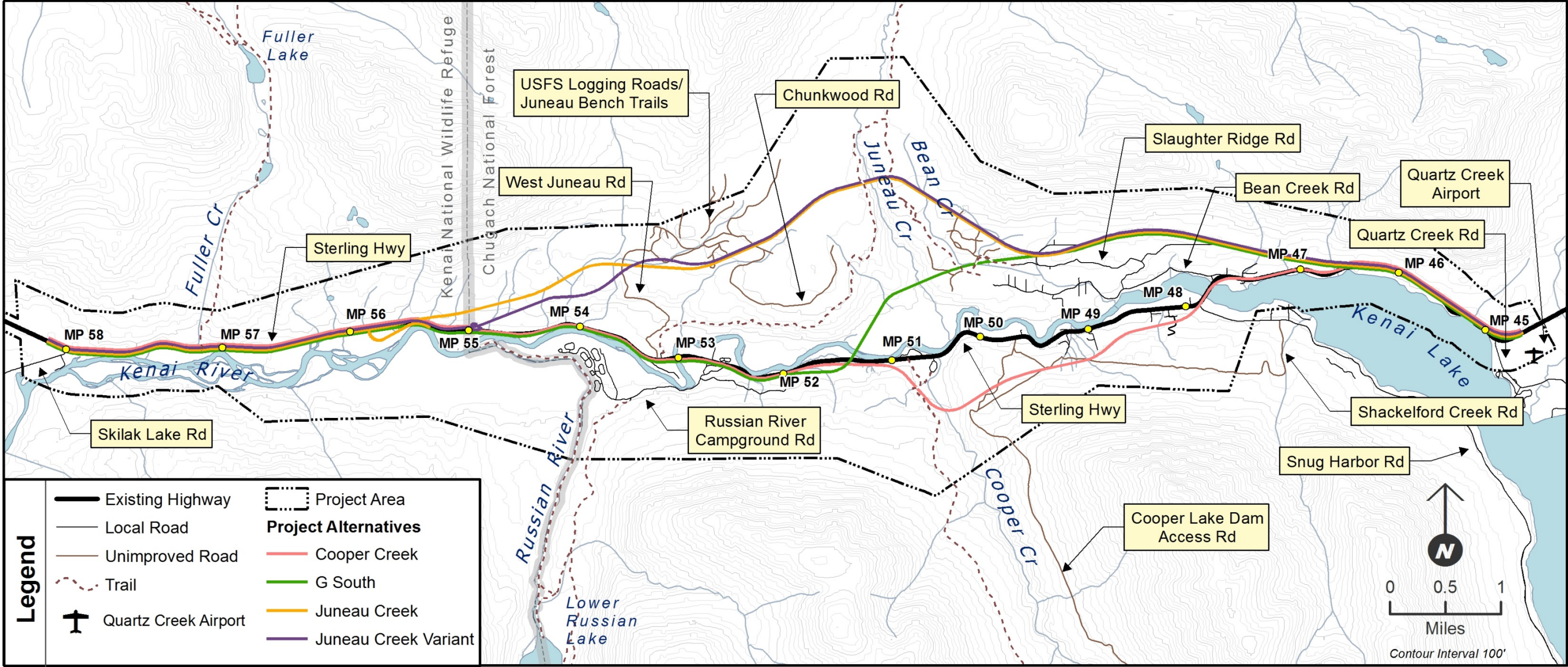


## **Mitigation**

Mitigation and commitments common to construction of all alternatives is described above in Section 3.6.2.2. Mitigation specifically related to construction of the Juneau Creek and Juneau Creek Variant alternatives is detailed below.

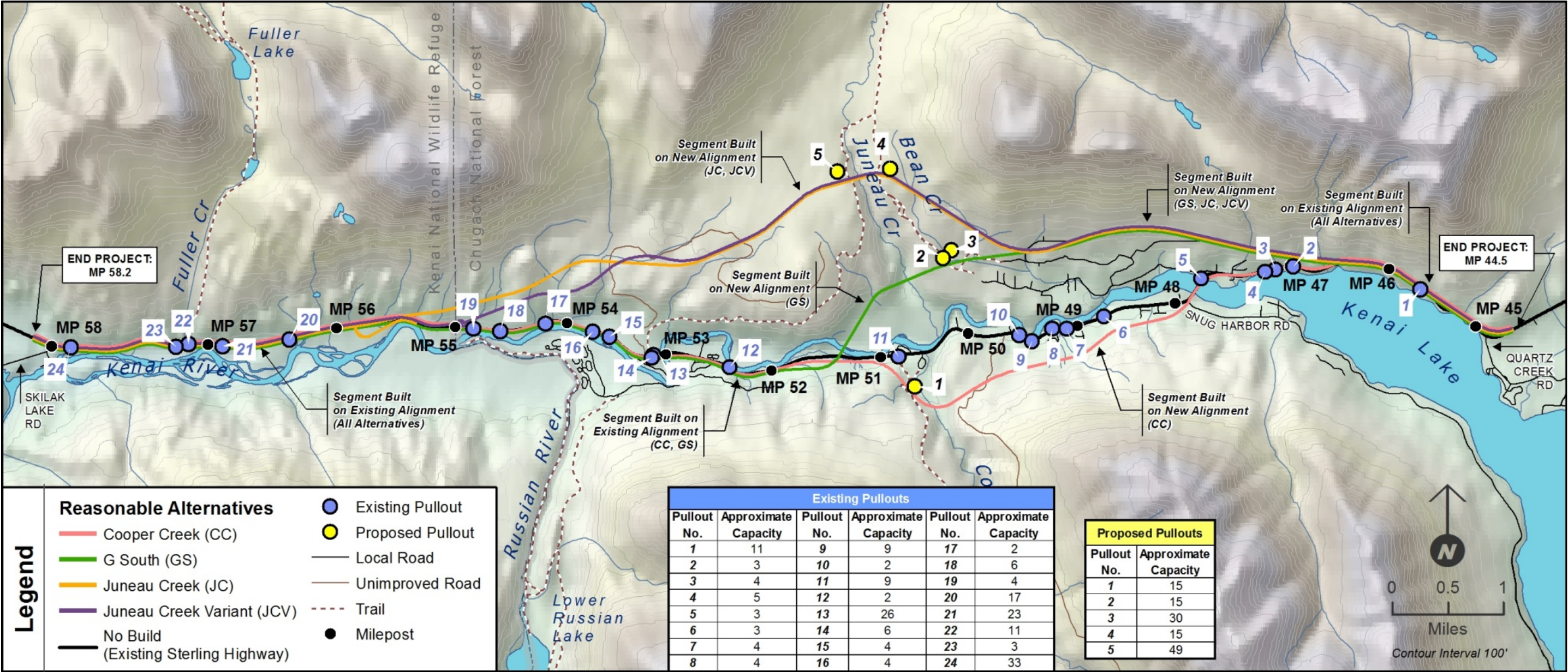
- **Sportsman’s Landing and the Russian River Ferry Facilities.** Under the Juneau Creek Variant Alternative, the construction contractor would be required to maintain public access to Sportsman’s Landing and the Russian River Ferry facilities. Temporary use of the parcel would be carried out without closing the access road, or with alternative access while the access road was reconfigured, unless construction was in winter, and would be coordinated with ADF&G and USFWS. Any temporary closure during construction would be limited to low-use periods at night and outside the prime fishing season. Notice of any closure in the spring-summer-fall use season would be given to area land management agencies (USFWS, USFS, ADF&G, DPOR/Kenai River Center), posted on site, posted in area public buildings, and published in Anchorage and Kenai Peninsula newspapers. These measures do not apply to the Juneau Creek Alternative, because it is located farther north, away from Sportsman’s Landing.
- **Other Recreation Facilities.** Access to Fuller Lakes Trail, the KNWR visitor contact station, and the turn onto Skilak Lake Road/Jim’s Landing may be impacted during construction activities. To minimize any impacts, primary construction activities that conflict with access would be scheduled outside high-use summer periods, to the extent possible. Access would be maintained except for short closures at less active times.

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Map 3.6-2. Pullouts in Project Area

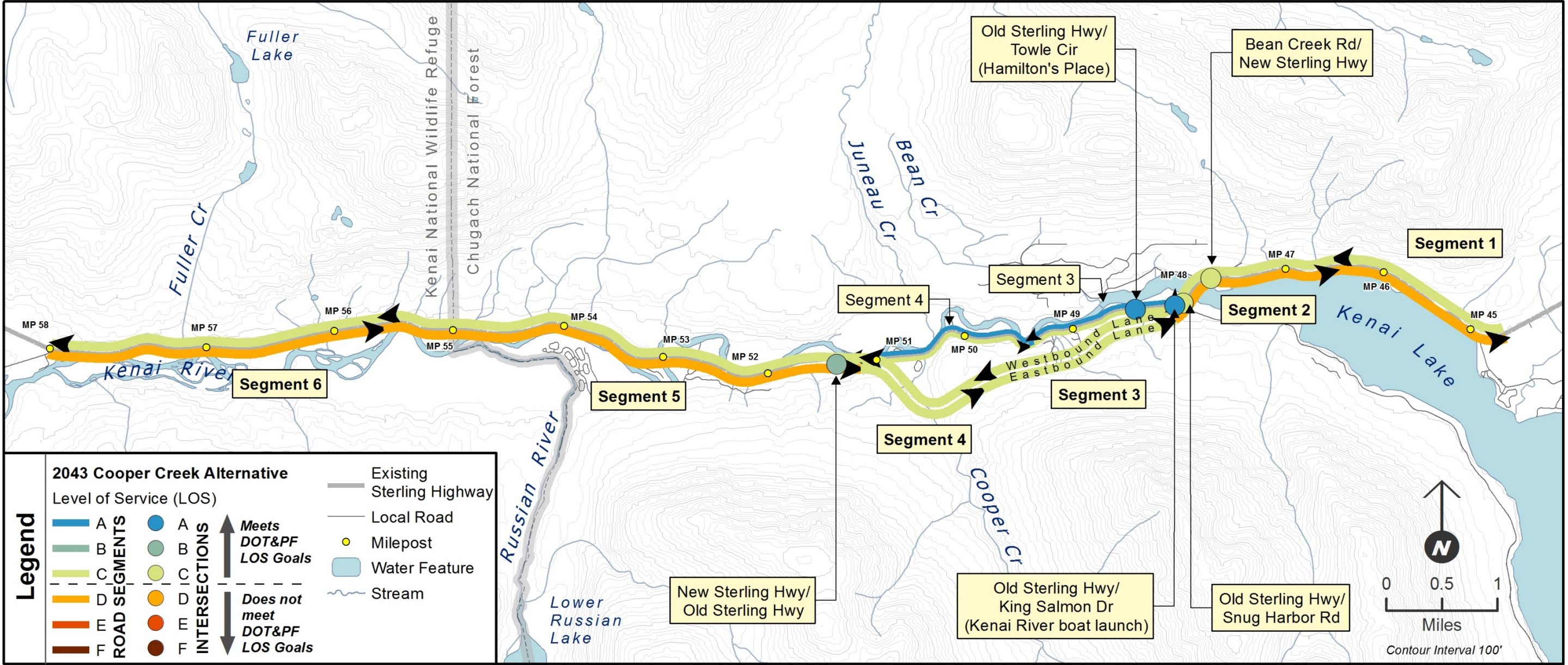
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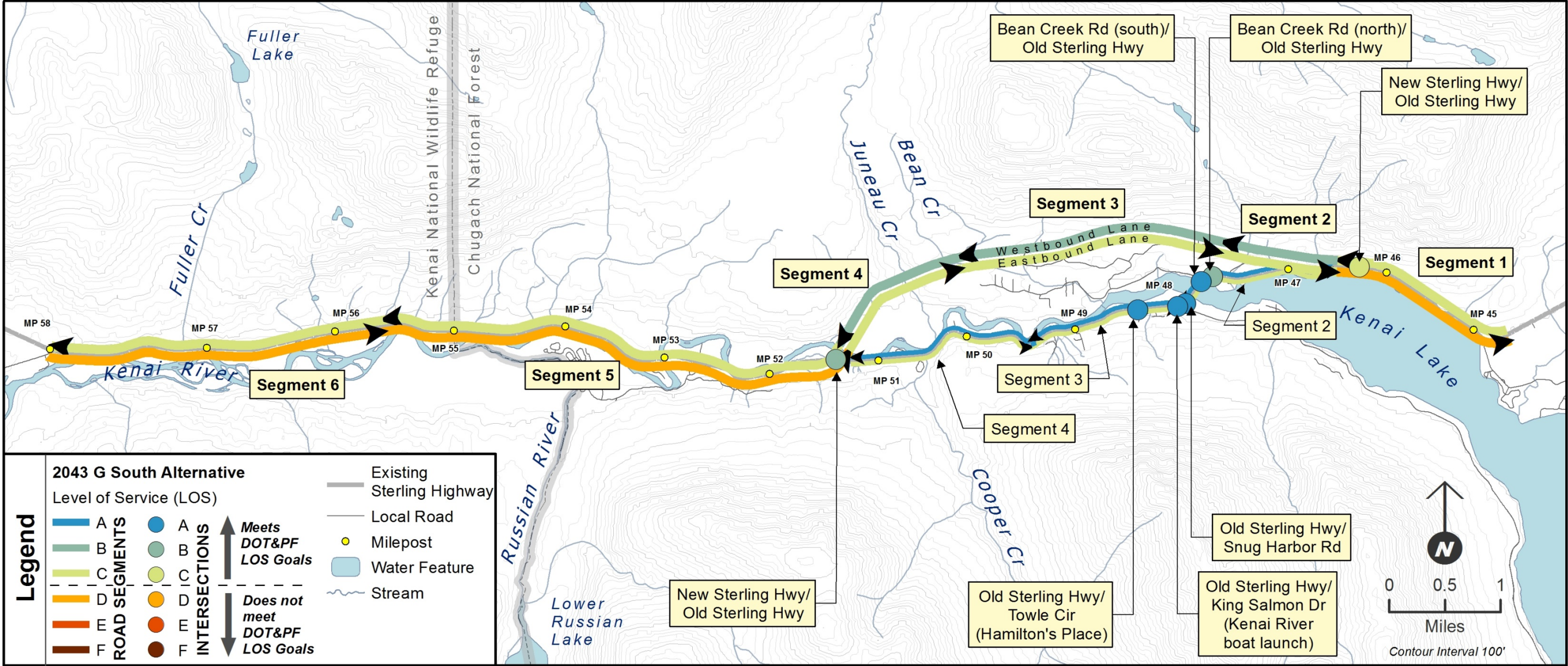
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Map 3.6-4. Cooper Creek Alternative 2043 level of service

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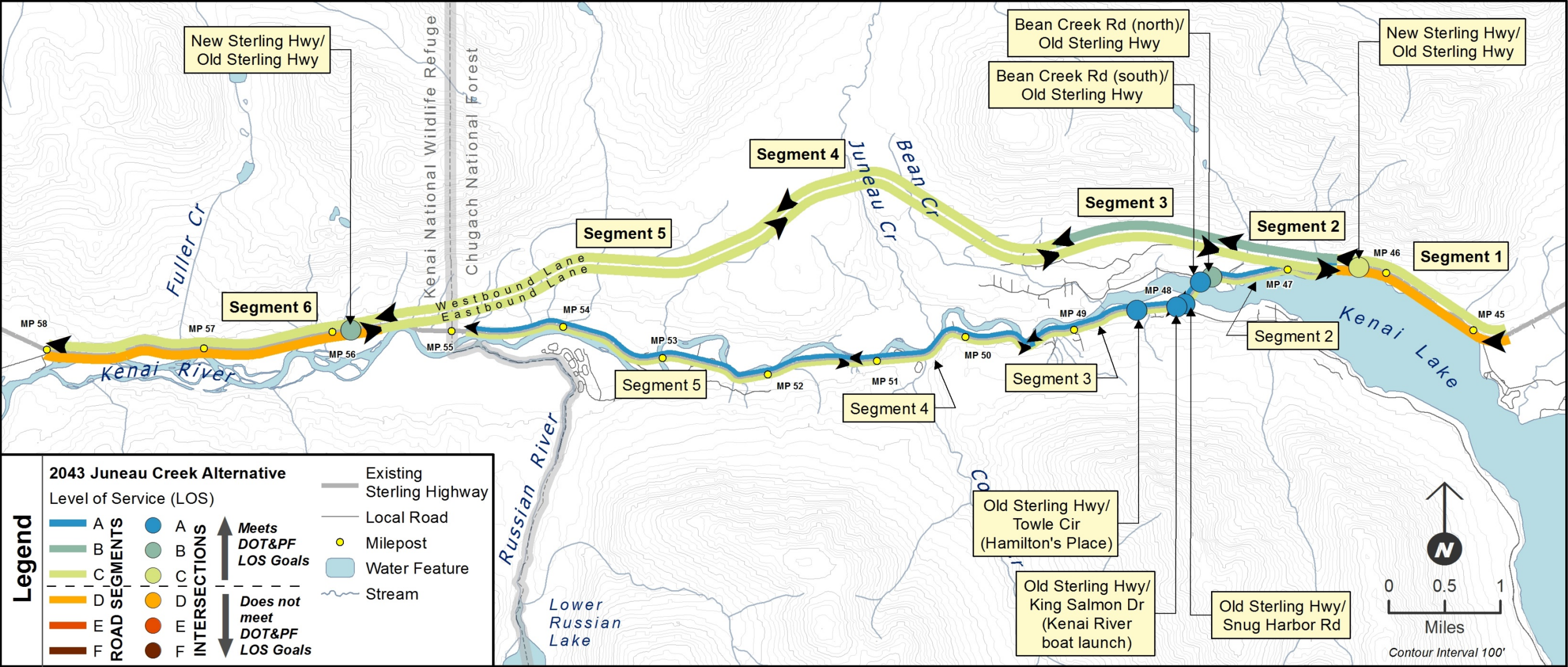




Map 3.6-5. G South Alternative 2043 level of service

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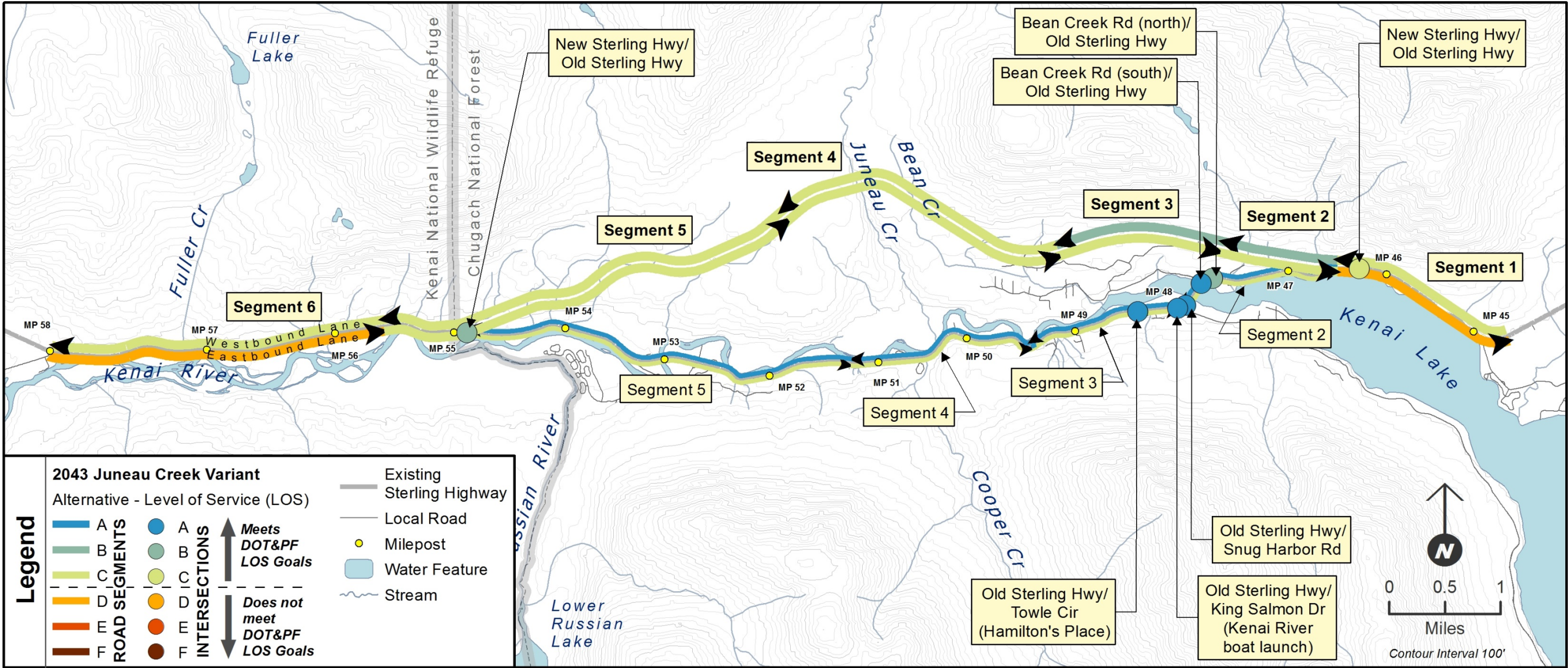




Map 3.6-6. Juneau Creek Alternative 2043 level of service

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Map 3.6-7. Juneau Creek Variant Alternative 2043 level of service

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## **3.7 River Navigation**

### **3.7.1 Affected Environment**

The Kenai River is approximately 82 river miles long in its entirety, as measured from its mouth at Cook Inlet (River Mile [RM] 0) to its origin at the outlet of Kenai Lake (RM 82). See Map 3.7-1. The Kenai River flows freely and is considered navigable along its entire length. The 17 miles of river between Kenai Lake and Skilak Lake is known as the “upper Kenai,” where the river is largely confined in a narrow glacial valley about 1–2 miles wide. The Sterling Highway Milepost (MP) 45–60 project area encompasses approximately 12 miles of the upper Kenai River from approximately RM 70 at Jim’s Landing and Skilak Lake Road to RM 82 at the Kenai River Bridge at Cooper Landing. Within the project area, two bridges cross the Kenai River: the Cooper Landing Bridge at MP 47.8 and the Schooner Bend Bridge at MP 53. There are no other bridges located along the upper Kenai River. The Russian River Ferry operates to cross the Kenai River at the confluence of the Russian River, near MP 55, and uses a cable suspended over the river for guidance.

The U.S. Coast Guard (USCG) administers a Bridge Program to protect river navigation by ensuring bridge clearances are adequate on navigable rivers. USCG requires a Navigation Evaluation as part of securing a Section 9 Bridge Permit (Section 9 of the Rivers and Harbors Act) for new or replacement bridges across navigable waterways.

#### **3.7.1.1 Existing Bridge Structures**

The Cooper Landing Bridge was constructed in 1965 and is 401 feet long and 35 feet wide, with a sidewalk approximately 4 feet wide that was retrofitted onto the bridge on the downstream side. The structure is a five-span bridge with four piers located in the river. The current navigational opening per span is approximately 79 feet wide by 12 feet high, based on estimated high water level. The Schooner Bend Bridge was built in the 1960s. The structure has four 70-foot spans and is approximately 280 feet long and 30 feet wide. There are three bridge piers in the river, and each span has an approximate navigational opening of 70 feet wide by 20 feet high. The Russian River Ferry runs on a single guidance cable suspended above the river. The cable is estimate to dip to within 12–15 feet of the river surface.

Navigational information was not gathered for bridges located on the middle and lower sections of the Kenai River below Skilak Lake. The upper Kenai River is sufficiently removed from the other river segments—both in terms of management prescriptions and geographic position (i.e., separated by Skilak Lake, including the rapids immediately upstream from the lake)—that navigation from the river mouth upstream through the project area to Kenai Lake is not known to occur. The upper Kenai River is primarily a drift-only section of the Kenai River Special Management Area (KRSMA) and therefore results in downstream, non-motorized boat traffic only.

#### **3.7.1.2 Boat Type, Size, and Distribution**

Much of the upper Kenai River has been designated “non-motorized,” with limitations on vessel types and sizes to limit the wake impact on stream bank habitat, reduce motorized/non-motorized user conflicts, and create a quality recreational experience for rafting, canoeing, kayaking,

fishing from boats and from the bank, and other non-motorized uses. The most common boat types found within the project area are hard-sided drift boats and inflatable rafts. Although less common, kayaks and canoes also use the upper Kenai River.

Operating a boat by use of a motor is prohibited year round on the upper Kenai River, from RM 80.7 (near the Princess Lodge in Cooper Landing) downstream to Skilak Lake (ADF&G 2014d). Motor use is permitted within the 1.3-mile stretch from RM 80.7 to the Kenai Lake outlet (RM 82); however, it is a no-wake area, and speed is restricted to 5 mph. While there are no size or horsepower limitations on motorized boats on Kenai and Skilak lakes and the 1.3-mile river section between the lake outlet and RM 80.7 as there are on all other sections of KRSMA, motorized boats must have a four-stroke motor or a direct fuel injection (DNR 2008a).

Specific information on typical vessel draft (height below water) or air draft (height above water) of boats operating within the project area is not readily available. However, the *Kenai River Supplement to the Alaska Boater's Handbook* (DNR 2008b) recommends that boats operating on the Kenai River should be shallow draft, low-sided, and flat-bottomed, and the typical drift boats, rafts, canoes, and kayaks on the upper Kenai River match this general description. Typical drift boats and rafts are less than 18 feet long with a beam of less than 8 feet. The Russian River Ferry is a small, rectangular barge tethered to a cable suspended across the Kenai River. The vessel is motorized but is dedicated to crossing along the cable only.

### **3.7.1.3 River Use and Accessibility**

Nearly all boating traffic within the project area is recreation-based but includes many permitted commercial operators who run guided float trips for sport fishing and whitewater recreation. The upper Kenai River offers outstanding sport fishing opportunities as well as a scenic landscape, both of which contribute to the river's heavy use. A 2004 Kenai National Wildlife Refuge (KNWR) study estimated the boat traffic accessing the upper Kenai River during a typical summer season at 6,963 boats and 24,941 people (West, personal communication 2006). Boat-based angling and scenic floats represent the major river user groups and the majority of boat traffic within the project area. More information on recreational river use (including commercial river use) can be found in Section 3.8.1.2, Water-Based Recreation Resources, and in the *Recreation Analysis* (HDR and USKH 2013).

The upper Kenai River has limited points of public entry, with one direction of travel. Boating access within the project area is provided at three main access points as described in Table 3.7-1 and shown on Map 3.7-1. The confluence of the Russian and Kenai rivers is one of the most congested areas on the river system. The Russian River Ferry is an important recreational feature within the project area where anglers can be transported across the river at RM 73.5 to access the opposite bank of the Kenai River as well as the confluence of the Russian and Kenai rivers.

In addition to these public boat launch areas, several riverfront properties on Kenai Lake within a mile of the Cooper Landing Bridge and along the river downstream for about 2.5 river miles in the vicinity of the Cooper Landing community have their own small docks or boat launching facilities. Based on a count using an aerial photograph, approximately 11 private launch facilities are located on the river and at least 17 upstream. Boats located on the shore are visible in the photo even where no dock or ramp is evident.



**Table 3.7-1. Kenai River access and facilities**

<b>MP (RM)</b>	<b>Access Point Name</b>	<b>Description</b>
48 (82)	Cooper Landing Boat Launch	This is a popular launch area for Kenai River and Kenai Lake. This State (DNR/ADF&G) facility provides 36 parking spaces, a concrete plank boat ramp, drinking water and toilet facilities, a boardwalk and viewing platform, an interpretive kiosk, and a volunteer host cabin.
54.9 (73.5)	Kenai-Russian River Ferry and Sportsman's Landing Boat Launch	This National Wildlife Refuge fee area with ferry concession provides paved parking for 75 vehicles, 30 trailers, and RVs. It is a major non-motorized boat launch area. Restrooms and river/bear viewing facilities are provided. This is a major fishing destination at the confluence of the Russian and Kenai rivers.
58 (69.5)	Jim's Landing	This U.S. Fish and Wildlife Service launch is the most widely used boat take-out point (Class II/III whitewater rapids exist downstream prior to the next takeout). Parking is limited, but there is a graveled, flat launch to the river. A visitor contact station on the Sterling Hwy. provides information about the KNWR and restrooms, as well as overflow parking capacity.

Note: DNR = Alaska Department of Natural Resources; ADF&G = Alaska Department of Fish and Game; RV = recreational vehicle, motorhome.

Kenai Lake bounds the eastern edge of the project area. The lake elevation is approximately 436 feet, and it is 22 miles long, covering 138,000 acres. While the lake is a valuable resource for its recreational opportunities, aesthetics, and fish habitat, it experiences far less boat traffic than the Kenai River. As described above, there are no boat size or horsepower restrictions on Kenai Lake. Boating access on Kenai Lake in and adjacent to the project area is provided at three main access points as described in Table 3.7-2 and shown on Map 3.7-1.

**Table 3.7-2. Kenai Lake access and facilities**

<b>MP</b>	<b>Access Point Name</b>	<b>Descriptions</b>
44.8	Quartz Creek	This USFS Kenai Lake boat launch (no vessel type or horsepower restrictions in the lake) includes 45 camp sites along Kenai Lake.
47.7	Snug Harbor Road	This road off the existing Sterling Highway leads along the south side of Kenai Lake, providing beach and launch access.
48	Cooper Landing Boat Launch	This State of Alaska boat launch just downstream of the Cooper Landing Bridge is a major Kenai River access point for rafts and drift boats for downriver activities, as well as motor boats accessing Kenai Lake and the first mile of the Upper Kenai River (motor use not permitted downstream of RM 80.7, a point near the Kenai Princess Lodge)

Note: hp = horsepower; USFS = U.S. Forest Service

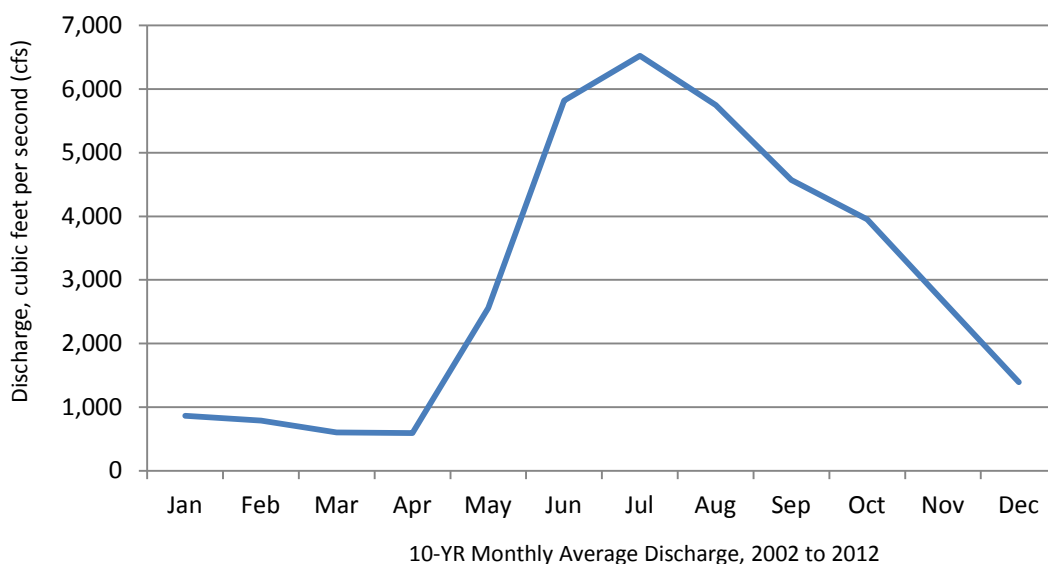
### **3.7.1.4 Waterway Characteristics**

The Kenai River within the project area generally flows west. At the western end of the project area, at approximately the junction of the Sterling Highway and Skilak Lake Road, the river

direction changes and flows southwest into Skilak Lake. The river width fluctuates throughout the project area from approximately 100 to 500 feet wide. Toward the western edge of the project area, the river becomes more braided and interspersed by islands. These characteristics are illustrated on Map 3.7-1.

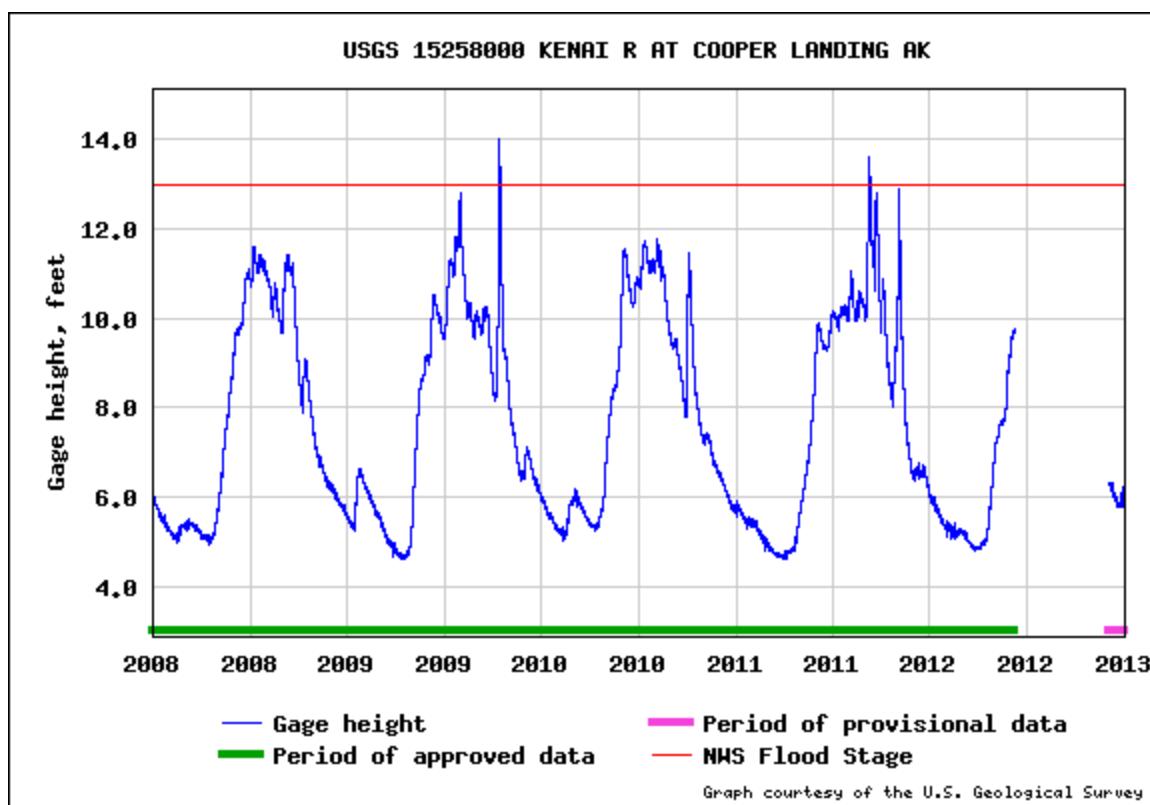
The upper Kenai River within the project area is characterized as very cold and relatively fast flowing, with many blind corners and sharp bends. The upper Kenai River is classified as class II and class III whitewater. At Schooner Bend (RM 76), there are class III rapids. Located outside the project area at RM 69–67 is the Kenai River Canyon, which includes class II/III rapids. The last take-out before the canyon is Jim's Landing, located at RM 69.5.

River height fluctuations and discharge data were examined for the Kenai River at the U.S. Geological Survey (USGS) water gage (USGS 15258000) located at Cooper Landing. This USGS river gage is the only gage located within the project area. A monthly average extending back 10 years (2002 to 2012) was gathered to document typical flow regimes and is presented in Figure 3.7-1. Gage height records over the past 5 years (refer to Figure 3.7-2) show a river depth fluctuation between approximately 5 feet and 12 feet, with occasional flood stages surpassing the 13-foot mark. Within the project area downstream of the gage, Juneau Creek and the Russian River both flow into the Kenai River, which would result in higher discharges at the western end of the project area.



**Figure 3.7-1. 10-Year monthly average discharge rate (cfs) for the Kenai River at Cooper Landing**

Source: USGS (2013).



**Figure 3.7-2. Gage height fluctuations for the Kenai River at Cooper Landing, 2008–2013**

### **3.7.1.5 Boating Accident Data**

Historical data on boating accidents occurring on the Kenai River over the past 10 years were provided by the Alaska Department of Natural Resources (DNR) Office of Boating Safety (DNR 2013). The data provided represented all reported accidents occurring on the entire 82-mile-long Kenai River over the 10-year period; these data were filtered to include only accidents that occurred within or near the project area as determined by the database location entry. Table 3.7-3 lists the accidents by number of fatalities and number injured. The database results are for only accidents that were voluntarily reported to the State. The actual number of accidents and minor injuries is likely much higher than reported.



**Table 3.7-3. River accidents occurring near the project area, 2004–2013**

<b>Accident Date</b>	<b>Accident State Case No.</b>	<b>Location</b>	<b># Fatalities</b>	<b># Injured</b>
2004	N/A	Near Cooper Landing	1	0
8/14/2006	AK-2006-0053	Jim's Landing above Skilak Lake on the Kenai River	0	0
6/28/2008	AK-2008-0030	Two miles upstream from Skilak Lake near Jim's Landing on the Kenai River	1	0
8/24/2008	AK-2008-0065	Below Sportsman's Lodge on the Kenai River, Cooper Landing	0	1
7/25/2009	AK-2009-0021	Upper Kenai River	0	0
7/5/2010	N/A	Kenai Peninsula	0	0

Source: DNR (2013).

### **3.7.2 Environmental Consequences**

This section is applicable only to the navigable waterways within the project area: the upper Kenai River and Kenai Lake near Cooper Landing. This section addresses the potential permanent impacts to river navigation resulting from implementation of the project alternatives. Effects to river navigation would occur during construction of Kenai River bridges; see Section 3.7.2.2 below, for construction impacts and proposed mitigation applicable to both the Cooper Creek Alternative and the G South Alternative.

#### **3.7.2.1 No Build Alternative**

##### **Direct and Indirect Impacts**

Under the No Build Alternative, there would be no changes to the existing conditions impacting river navigation. Temporary impacts to navigation may occur in association with planned routine replacements of the Cooper Landing and Schooner Bend bridges, anticipated by 2043. See Section 3.27.5.6 (Cumulative Impacts) for this discussion. It is assumed there would be no permanent impacts to river navigation on the Kenai River.

#### **3.7.2.2 Cooper Creek Alternative**

##### **Direct and Indirect Impacts**

Improvements under the Cooper Creek Alternative would require the replacement of two existing bridges: the Cooper Landing Bridge (at MP 47.8) and the Schooner Bend Bridge (at MP 53). The proposed bridge structures to be built would not result in any permanent impacts to river navigation. Navigational openings (i.e., vertical and horizontal clearances) of the proposed new bridge structures would be sized similarly to the existing openings and would not impede river navigability or boater safety differently than the existing bridges. Pier placement and number of piers for the replacement bridges would be similar to existing conditions.

Because the navigational openings for all proposed bridge structures would perpetuate or improve upon existing conditions, no impact is anticipated to vessels on the waterway engaged

in recreational, commercial, or emergency operations within the project area. Under the Cooper Creek Alternative, the proposed bridges would have no effect on river-based commerce, economic growth and development, or critical infrastructure within the project area or downstream.

### **Construction Impacts**

Bridge construction would impact river navigation through full or partial temporary closures of the river channel to boating in the vicinity of the bridges. Closures would occur for safety likely during placement of pilings (pile driving) and placement of long bridge girders or other large bridge components by crane. Depending on the work underway, closures may be to half the river or the whole river. Impacts to river navigation would be short term and temporary, and limited to the period of time when equipment, workers, and temporary structures would be located in the river. For each bridge, it would likely take two seasons to build the bridge and remove any existing bridge (construction of the two bridges could occur simultaneously).

### **Mitigation**

The following mitigation measures and commitments are proposed to reduce impacts to river navigation. Direct and indirect impacts are discussed above. See Section 3.8.2 (in Park and Recreation Resources) for additional mitigation measures and commitments for impacts to river access sites.

The number of piers used for each replacement bridge would be the same or fewer than the existing bridges. To avoid navigational hazards, no part of either of the old bridges would be left in the river, unless, for the Cooper Landing Bridge, it was incorporated into the new bridge design.



**Example of temporary navigation closure.**

Pilings used to support the spans of temporary construction bridges at each bridge construction site would be placed to allow for continued navigation of the river, and sufficient vertical clearance would be provided at the temporary bridges for ease of navigation.

A navigational control plan would be prepared for construction of bridges over the Kenai River, with the intent to minimize disruption to boaters. The navigational control plan would address partial, full, and potential emergency river closures needed for safety when installing bridges over the river. The navigation plan also would address public notification requirements. Complete closures would be minimized to the extent practicable. Complete closures could last as long as 8-hour shifts and may be required during pile driving or bridge girder placement. Complete closures would be minimized during the summer boating and fishing season, and complete closures during this time would be scheduled at night when possible.

The Kenai River closure plan and anticipated closure schedule would be developed a year ahead of implementation, to give notice to commercial river guides for planning the following season.

Notice of intent to close the river in the vicinity of construction would be given to permitted river guides and area land managers well ahead of actual closure; would be published in Anchorage and Kenai Peninsula newspapers; and would be posted at area campgrounds, boat ramps, and public buildings. A navigation plan would be written in cooperation with USCG, DNR, and (for fish habitat issues) ADF&G. It would include, but would not be limited to, the following measures:

- Closing only one side of the Kenai River at a time, using a buoy line with information posted on the buoys and at boat launch ramps, alerting users of partial closure.
- Avoiding complete closures of Kenai River navigation from approximately June 15 to August 15 and avoiding complete closures to the extent practical until November 1.
- Ensuring a motorized emergency response boat would be available on site, with qualified operators, at all times during active construction to inform Kenai River users of closures and assist boaters to shore if necessary.

During bridge construction, there is an additional risk to navigation associated with the dropping of tools or materials into the river or onto boaters. This would be reduced by such measures as hanging a net below the work areas. Impacts to navigation also could result from remnant bridge parts associated with bridge replacement. All replaced bridge parts and any temporary construction piers and materials would be removed if not used by the new bridge, and piers not incorporated into the new bridge that could not be removed would be cut off below the streambed.

### **3.7.2.3 G South Alternative**

#### **Direct and Indirect Impacts**

The G South Alternative would require the construction of a new bridge across the Kenai River (near existing MP 51.2) as well as the replacement of the Schooner Bend Bridge (at MP 53). The bridge structures to be built would not result in any substantial permanent impacts to river navigation. Navigational openings (i.e., vertical and horizontal clearances) of the proposed replacement and new bridge structures would be sized at dimensions similar to or larger than the existing openings of the Schooner Bend Bridge. This should provide a navigation and boater safety experience similar to the experience that occurs with the existing bridges.

The new bridge would introduce new navigational obstacles otherwise not present on this section of the river; however, the new bridge would be located in a relatively straight section of river, approximately 0.5 mile downstream from the nearest bend, giving boaters ample time to see and negotiate the structure. The new bridge would be located approximately 4 miles downstream of the Cooper Landing Bridge and 2 miles upstream of the Schooner Bend Bridge, and therefore would not introduce a new hazard in proximity to other existing bridges.

Because the navigational openings for all proposed bridge structures would perpetuate or improve upon existing conditions, no impact is anticipated to vessels on the waterway engaged in recreational, commercial, or emergency operations within the project area. Under the G South Alternative, the proposed bridges would have no effect on river-based commerce, economic growth and development, or critical infrastructure within the project area or downstream.

### **Construction Impacts**

Construction impacts resulting from the G South Alternative would be of the same type as those from the Cooper Creek Alternative, which are described above in Section 3.7.2.2. However, it is likely that river closures and timing restrictions would be of shorter duration for construction of the G South Alternative's new Kenai River Bridge because it would not involve demolition and removal of an existing structure, as would be the case for the Cooper Creek Alternative.

### **Mitigation**

Navigational clearances designed into both the new Kenai River Bridge and the replacement Schooner Bend Bridge would be the same or greater than the clearances that currently exist at the Schooner Bend Bridge.

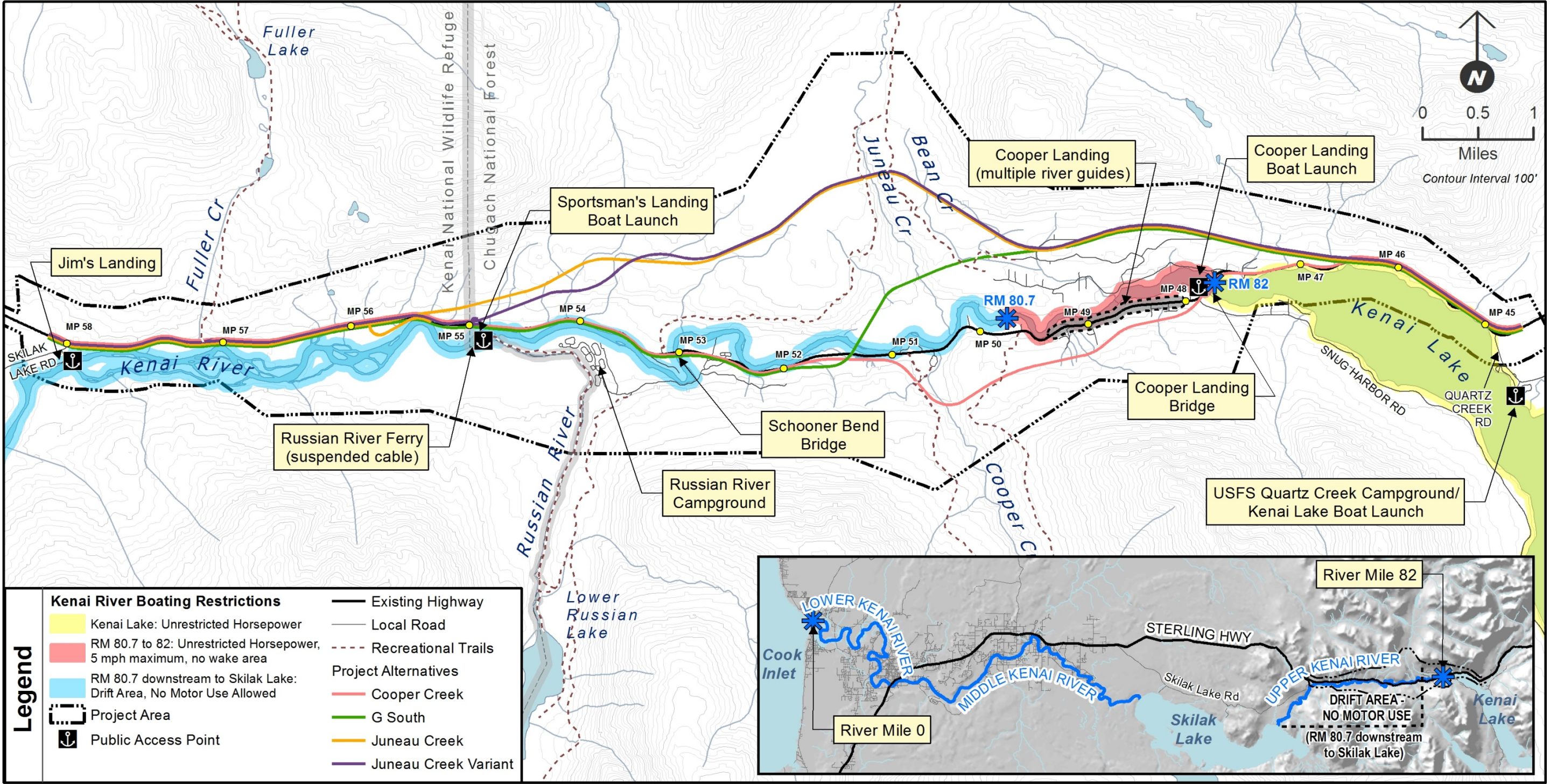
Other mitigation measures and commitments proposed for the G South Alternative to reduce construction-related impacts to river navigation are identical to those proposed under the Cooper Creek Alternative (see Section 3.7.2.2 above). Refer to Section 3.8.1 in Park and Recreation Resources for additional mitigation measures and commitments for impacts to river access sites.

#### **3.7.2.4 Juneau Creek and Juneau Creek Variant Alternatives**

The Juneau Creek and Juneau Creek Variant alternatives would not include any new or replacement structures over any navigable waterways within the project area and, therefore, would have no impact to river navigation.

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## **3.8 Park and Recreation Resources**

A *Recreation Analysis* (HDR and USKH 2013) completed for this project details the recreation background of the project area. The following two subsections are largely a summary of that study. Section 3.8.1 summarizes the affected environment for recreation resources. Section 3.8.2 addresses impacts to parks and recreation resources. Many of the park and recreation properties in the project area are protected under Section 4(f) of the Federal Department of Transportation Act, which prohibits the use of certain parks, recreation areas, wildlife refuges, or historic properties for transportation projects. For a comprehensive analysis of properties protected under that Federal law, see Chapter 4, Section 4(f) Evaluation.

### **3.8.1 Affected Environment**

#### **3.8.1.1 Overall Recreational Character**

The Kenai and Russian rivers, associated area campgrounds, and area trails—along with private commercial businesses that cater to recreationalists—combine with natural scenery to define the Cooper Landing area and to draw recreation users from around the state and tourists from around the world for sport fishing, camping, mountain biking, hiking, hunting, and other recreational pursuits. Multiple designated park and recreation sites owned and managed by several State and Federal agencies populate the project area, particularly in a 4-mile stretch of the Kenai River valley between the mouth of Cooper Creek and the mouth of the Russian River (approximately existing highway milepost [MP] 51 to MP 55). A map showing trails and some of the park and recreation features appears at the end of this chapter (Map 3.8-1). Other recreation-oriented maps appear at the end of Chapter 4, Section 4(f) Evaluation.

Recreation in the area is managed under several land management plans, including the multi-agency *Kenai River Comprehensive Management Plan*, the *Chugach National Forest Revised Land and Resource Management Plan*, the *Kenai National Wildlife Refuge Comprehensive Conservation Plan*, and the *Kenai Peninsula Borough Comprehensive Plan*. Details on these plans appear in Section 3.2, Land Use Plans and Policies.

The recreational character of the upper Kenai River area/project area includes a combination of a spectacular natural landscape; public lands managed in large part for recreation, including developed public recreation facilities; private commercial properties (e.g., lodges) and businesses operating on public lands under permit; and relative ease of access via the Sterling Highway for the majority of the state's population and visitors (compared to much of Alaska, which is without roads). The community of Cooper Landing is an integral part of the recreational landscape, with its many lodging options and fishing/floating outfitters and guides. Primary areas along the highway where recreation is concentrated include the support services, guides, and lodges in the community and on private lands along the river, and a concentration of mostly public recreation sites in the MP 51–55 area (mouth of Cooper Creek to mouth of the Russian River). The private and public sites throughout the project area from east to west (Map 3.8-1), include:

- Commercial services located at Quartz Creek, and access via Quartz Creek Road to campgrounds outside the project area

- Commercial services, lodges, and guide services located in MP 47–48 portion of Cooper Landing (northeast of the Cooper Landing Bridge)
- Cooper Landing Boat Launch and Day Use Area
- Commercial services, lodges, and guide services located in the MP 48–50.5 portion of the Cooper Landing (southwest of the Cooper Landing Bridge)
- Cooper Creek Public Camp and Picnic Ground (recreation withdrawal, Tracts A and B)
- Gwin’s Lodge
- Russian River Campground/trailhead for Russian Lakes Trail and Russian River Angler’s Trail
- K’Beq Footprints Heritage Site
- Trailhead for Resurrection Pass Trail
- Sportsman’s Landing-Russian River Ferry area
- Trailhead for Fuller Lakes Trail
- Kenai National Wildlife Refuge (KNWR) visitor contact station
- Jim’s Landing off Skilak Lake Road, which also provides access to KNWR recreation sites outside the project area.

The highway and all Kenai Peninsula traffic (local and through traffic) pass through this rich recreation setting. The access provided by the highway to Kenai Lake, the Kenai River, and the Russian River is in part responsible for the area’s recreational popularity. The area is heavily used by recreational traffic during the busy summer period for access to campgrounds, trailheads, interpretive sites, and fishing, as well as for traffic traveling through. There are safety issues inherent in the mix of through-traffic with parked and slow-moving recreational traffic and pedestrians, particularly on the stretch of highway near MP 54–55 (Sportsman’s Landing-Russian River Ferry area), that have been a management problem for the Alaska Department of Transportation and Public Facilities (DOT&PF), Alaska State Troopers, and the managers of the recreation resources.

### **3.8.1.2 Section 6(f) and Section 4(f)**

Some parks and recreation facilities have special protection under Federal law. Outdoor recreation facilities and parks funded by the Federal Land and Water Conservation Fund Act are subject to protections under Section 6(f) of that act. However, the State administrator for the Land and Water Conservation Fund Act reports there are no park or recreation features subject to 6(f) protections in the project area (Gray, personal communication 2008). Some park and recreation areas are subject to special protection under Section 4(f) of the U.S. Department of Transportation (USDOT) Act, a law that applies only to USDOT agencies.

Because the Federal Highway Administration (FHWA) is a USDOT agency and FHWA funds are being used for this project, and because proposed alternatives use land from properties protected under the Act, a Section 4(f) Evaluation was prepared. Chapter 4, Section 4(f) Evaluation, is the complete evaluation of those properties to which Section 4(f) protections apply.

Section 4(f) applies to “publicly owned land of a public park, recreation area, or wildlife and water refuge of national, State, or local significance, or land of an historic site or national, State, or local significance” (23 CFR 774.17). FHWA has identified parks, recreation areas, refuges, and historic properties that are protected by Section 4(f). This section references refuges along with recreation features and indicates those to which FHWA has determined that Section 4(f) applies. See Table 3.8-1. For historic properties protected by Section 4(f), see Section 3.9, Historic and Archaeological Preservation. Further detail on the Section 4(f) properties appears in Chapter 4.

**Table 3.8-1. Park, recreation, and refuge properties and associated Section 4(f) applicability**

Property Name	Size (acres) if Known, or Other Notes	Managing Agency or Landowner	4(f) Applies
<b>Park</b>			
Helen Rhode Community Wildflower Park		DOT&PF ROW	N <sup>a</sup>
Kenai Peninsula Borough “Preservation” Lands		Borough	N
KRSMA (legislatively designated as a park unit)	44,000 total 720 in project area	DNR-DPOR	Y
KRSMA, proposed additions (designated in land use plan; managed “as-if” a park)		DNR-DPOR	N
<b>Wildlife Refuge</b>			
Kenai National Wildlife Refuge		USFWS	Y
KNWR Fuller Lakes Trail access in highway ROW		USFWS, DOT&PF	Y
KNWR visitor contact station facilities in highway ROW		USFWS, DOT&PF	Y
KNWR Russian River Ferry <sup>b</sup>		USFWS	Y
<b>Recreation Area</b>			
Art Anderson Slaughter Gulch Trail		DNR, USFS, Borough	N <sup>a</sup>
Bean Creek Trail (see also entry under Historic Sites)		USFS, DNR, Borough	Y
Birch Ridge trails		USFS, Borough	N <sup>a</sup>
Cooper Creek Public Camp and Picnic Ground (recreation withdrawal, Tracts A and B)	19.0	USFS	Y
Cooper Creek Public Service Site, Tract C (recreation withdrawal)	40.0	USFS	N
Cooper Lake Dam Road		USFS, Borough, private	N
Cooper Landing Boat Launch and Day Use Area (Kenai Area Plan Unit #391F)	5.4	DNR, ADF&G, DPOR, DOT&PF ROW	Y

Property Name	Size (acres) if Known, or Other Notes	Managing Agency or Landowner	4(f) Applies
Coyote Notch Loops Trail		USFS, Borough	N <sup>a</sup>
Juneau Falls Recreation Area (recreation withdrawal)	320.0	USFS	Y
USFS Kenai River Recreation Area (recreation withdrawal)	350.0	USFS	Y
Lower Russian Lake Recreation Area (recreation withdrawal)	1,855.0	USFS	Y <sup>a</sup>
Quartz Creek Campground (recreation withdrawal)	91.0 Not affected	USFS	Y <sup>a</sup>
Resurrection Pass National Recreation Trail	+/-4,600.0	USFS	Y
Russian Lakes Trail and Russian River Angler's Trail	Not affected	USFS	Y <sup>a</sup>
Russian River Campground Area (recreation withdrawal)	340.0	USFS	Y
Shackleford Creek/Powerline Trail		DNR, Chugach Electric Assoc.	N <sup>a</sup>
Sportsman's Landing Boat Launch <sup>b</sup>	4.3	ADF&G, USFWS	Y
Sterling Highway State Scenic Byway		DOT&PF	N <sup>a</sup>
Stetson Creek Trail (see also entry below under Historic Sites)		USFS	Y
USFS Access Roads/West Juneau Road		USFS	N

<sup>a</sup> Decisions on some properties did not include specific consultation regarding site significance with the land managing agency, usually because the site was not expected to be affected by any of the alternatives, and/or because significance was presumed.

<sup>b</sup> Although accessed from the same driveway and fee station as Sportsman's Landing, the Russian River Ferry is owned by the USFWS, while Sportsman's Landing is owned by ADF&G. Both sites are managed by USFWS (Sportsman's under an interagency agreement). Section 4(f) impacts to Russian River Ferry are evaluated as part of the overall Kenai National Wildlife Refuge property. Section 4(f) requires consideration of the KNWR as a single protected property.

Note: ADF&G = Alaska Department of Fish and Game; Borough = Kenai Peninsula Borough; DNR = Alaska Department of Natural Resources; DPOR = Alaska Division of Parks and Outdoor Recreation; KRSMA = Kenai River Special Management Area; ROW = right-of-way; USFS = U.S. Forest Service; USFWS = U.S. Fish and Wildlife Service

Analysis for this project of the properties listed in Table 3.8-1 appears in *Background for Section 4(f) Determination of Applicability* (HDR 2008c). The document is on file with DOT&PF and FHWA but is not published for ready access by the public because it contains sensitive information about historic and cultural sites. Effects to the listed properties that are subject to Section 4(f) are addressed in Chapter 4; those park and recreation properties that are not subject to Section 4(f) are discussed below in the remainder of Section 3.8. Cultural resources are addressed in Section 3.9, Historic and Archaeological Preservation. Kenai Peninsula Borough (Borough) and State of Alaska planning areas listed in Table 3.8-1 are addressed under discussion of management plans in Sections 3.1 (Land Ownership) and 3.2 (Land Use Plans and Policies).

### **3.8.1.3 Water-Based Recreation Resources**

The lakes, rivers, creeks, and drainages in the Kenai River valley are scenic, extremely productive fisheries, and therefore attractive to a range of recreation users, from fishing and boating enthusiasts to hikers and sightseers enjoying scenic views. Water-based recreation is a key component of the overall recreational character addressed in the impacts discussion in Section 3.8.2. Water bodies that serve as important recreation resources in the project area include Kenai Lake, the Kenai River, and the Russian River. The outlet of Kenai Lake and immediate downstream area include many private lots with river frontage, and these have attracted recreational second homes, lodges, river guides, and other commercial interests centered mostly on water-based recreation. See also the discussion in 3.8.1.1, above, on overall recreational character of the project area. Section 3.8.1.4, below, discusses recreation developments on land in the project area, many of which support water-based recreation.

**Kenai Lake.** Kenai Lake is a distinctive landmark providing a unique scenic vista along the Sterling Highway. The submerged lands are part of the Kenai River Special Management Area (KRSMA), a unit of the State park system that is addressed in detail in Chapter 4, Section 4(f) Evaluation. The lake enhances the recreational experience of travelers and sightseers, hikers in the area, residents, recreational cabin users, and lake users engaged in recreational activities. The lake supports recreational use, with multiple access points and a number of well-developed facilities oriented primarily to summer use. The lake is also used for recreation in the winter for snowmobiling, ice skating, and other winter sports.

The Sterling Highway, Quartz Creek Road (along the lake at the eastern end of the project area), and Snug Harbor Road (along the west side of the lake) have a number of pull-offs and access points along Kenai Lake. Kenai Lake facilities support recreational boating with three launch sites and boat-accessible picnic areas and camping facilities inside and outside the project area. Floatplanes land on Kenai Lake. Additionally, on State-owned land, Camp Fire USA's Alaska Council provides Camp K on Kenai Lake (an overnight camp), and "Waikiki Beach" is a popular beach for local recreation along Snug Harbor Road.

**Kenai River.** The Kenai River is a large, glacier-fed stream that flows out of Kenai Lake and travels westward 82 miles into Cook Inlet. The 17 miles of river between Kenai Lake and Skilak Lake is known as the "upper Kenai," where the river is largely confined in a narrow glacial valley, about 1 to 2 miles wide. The upper Kenai River area largely coincides with the project area. Within the valley, the Sterling Highway is located alongside the Kenai River, within a few hundred feet or less of the water (and often immediately adjacent to the water). Cooper Landing Bridge and Schooner Bend Bridge cross the Kenai River at MP 47.8 and 53, respectively. The Kenai River (submerged lands) is part of the KRSMA, discussed further in Chapter 4. Various State-owned uplands along the river and its tributaries are proposed additions to the KRSMA and are managed by the Alaska Division of Parks and Outdoor Recreation (DPOR) as if they were part of the State park.

The upper Kenai River is typically more than 100 feet wide with turquoise glacier water, giving it a distinctive scenic quality that enhances the recreational experience for anglers, boaters, and sightseers, as well as affording scenic views for hikers and recreational motorists. Because of the easy access to the river along the Sterling Highway and high recreational demand, stream banks along the river at some locations show signs of heavy recreational use, including erosion, although erosion is typically from natural causes (HDR and USKH 2013). Land management

agencies have been addressing erosion with multiple projects since the *Kenai River Comprehensive Plan* was instituted in the late 1990s when State agencies, the U.S. Fish and Wildlife Service (USFWS), and the U.S. Forest Service (USFS) all signed a memorandum of understanding to accept and implement the plan.

The *Recreation Analysis* (HDR and USKH 2013) completed for this project indicates that the Kenai River is a major recreational attraction in the project area, and is heavily used because of its scenic, fishing, and recreational boating values within easy road access of Alaska’s highway system. The USFS in its role as a cooperating agency notes that anglers use the Schooner Bend Bridge to access fishing spots on either side of the Kenai River from existing informal pullout parking areas along the highway on the west side of the bridge or from the Resurrection Pass Trailhead. The Kenai River is considered a sport fishing “paradise” and is one of the last river systems in the world to contain world-class Chinook (king) salmon that can weigh nearly 100 pounds. Altogether, the upper Kenai River and its tributaries (including the Russian River) support 39 species of fish, and according to the recreation analysis the Kenai River as a whole is the most heavily used river in Alaska for freshwater sport fishing.

The *Kenai River Comprehensive Management Plan* acknowledges that the river is “overwhelmed by users during the peak fishery periods,” damaging habitat near popular facilities and along fragile stream banks, where the “number of users far exceed site capacities,” especially on undeveloped public land and at public facilities. The recreation analysis indicates that it is difficult to estimate the actual use of the river since the number of anglers who park on the road and hike in probably exceeds the number of “countable” users of the area.

Overall, the Kenai River recreational fishing effort is about 15 percent of the statewide total (DNR, ADF&G, KPB 1997). The upper Kenai River is an important component of this total. Table 3.8-2 provides recent statistics.

**Table 3.8-2. Kenai River angler days (effort expended by recreational anglers), 2005–2009, for early run and late run sockeye salmon**

Year	2005	2006	2007	2008	2009
<b>Angler days</b>	388,677	329,122	410,381	360,344	337,217

Source: Begich and Pawluk (2011).

Note: These data are for the entire length of the Kenai River; the upper Kenai River angling effort is a portion of this larger total.

Along with fishing, floating the upper Kenai River is a major draw. Much of the upper Kenai River in the project area has been designated “non-motorized,” with limitations on vessel types and size to limit the wake impact on stream bank habitat, reduce motorized/non-motorized user conflicts, and create a quality recreational experience for rafting, canoeing, kayaking, bank fishing, and other non-motorized uses.

The DPOR requires park use permits for commercial fishing and float guides operating on the Kenai River. The number of guides on the Kenai River has remained steady at about 340, with approximately 350 registered vessels and 130 drift boats. The estimated number of visitors boating the upper stretch of the river during a typical summer is around 25,000, according to a KNWR study (Table 3.8-3). Because much of the upper Kenai River is restricted to non-



motorized use and has limited points of entry with one direction of travel, the study included 24-hour-a-day video, and thus obtained accurate numbers for the 2004 boating season from mid-June to late September.

**Table 3.8-3. Upper Kenai River total boat use, 2004 season**

<b>Survey method</b>	<b>Visitors</b>	<b>Boats</b>	<b>Anglers (%)</b>	<b>Scenic (%)</b>	<b>Guided (%)</b>	<b>Unguided (%)</b>	<b>Unknown (%)</b>
Video surveillance	24,941	6,963	62	32	45	40	15
Interviews	6,500	1,700	66	34	51	49	—

Source: West, personal communication (2006).

Note: Interview and video surveillance occurred at Jim's Landing between June 17 and September 30, 2004; drift boats were most widely used, with rafts, then cata-rafts, kayaks, and canoes.

**Russian River.** The Russian River is a clear tributary stream flowing from the mountains south of the highway some 12 miles to its confluence with the Kenai River at MP 55 of the existing Sterling Highway. From the confluence upstream about 2.5 miles (to a regulated point 1,800 feet below a low series of falls), the lower Russian River, like the adjoining Kenai River, is recognized as one of the busiest fishing rivers in Alaska.

Besides the fishery on the lower river, Russian River recreational resources are spread from the confluence of the Kenai and Russian rivers upstream along a 23-mile trail system that features a gorge, a waterfall, two lakes, and three USFS public recreation cabins (HDR and USKH 2013). As a result of these amenities, the Russian River experiences overuse pressures in some areas. New facilities, controlled access, fees, and stream bank restoration are methods used to maintain the condition of this recreational resource (HDR and USKH 2013).

The Russian River is the most popular clear-water sockeye salmon fishery in Alaska, with a 10-year average of 60,965 angler-days per year for sockeye salmon alone (Table 3.8-4). More than 1,000 anglers per day can be found fishing the Russian River/Kenai River confluence, and demands made on the Russian River fish population are sometimes greater than the resource can provide (HDR and USKH 2013).

**Table 3.8-4. Russian River angler days (effort expended by recreational anglers), 2005–2009, for early run and late run sockeye salmon**

<b>Year</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2000–2009 Average</b>
Angler days	55,801	70,804	57,755	55,444	64,518	60,965

Source: Begich and Pawluk (2011).

The Chugach National Forest (CNF) manages most of the Russian River (not including the lowest segment near the Kenai River) as a Wild and Scenic River (although it is not so designated by Congress at this time) in recognition of its outstanding “wild, recreational, fisheries and prehistoric heritage values” (USFS 2002a). South of the Sterling Highway, the river forms the boundary between the CNF and the KNWR; most KNWR lands in the area are

designated as Federal Wilderness. The heavy seasonal use pressures created by these outstanding qualities create substantive management and facility capacity issues (HDR and USKH 2013).

The Russian River Land Act (Pub. L. 107-362) spells out a settlement for Alaska Native land claims in the Russian River confluence area and protects public recreation lands in the area (the USFS campground, USFWS Russian River Ferry site, and most of the land remain in public ownership), while conveying certain specified parcels and archaeological rights to Cook Inlet Region, Incorporated, the regional Native corporation formed under the Alaska Native Claims Settlement Act (43 USC 1601-1624).

The Russian River, and sockeye salmon in the Kenai bound for the Russian River, is the main attraction for recreational sport fishing in the project area. The Russian River has scenic, wildlife, and cultural attributes that create a unique recreational experience.

#### **3.8.1.4 Land-Based Recreation Resources**

**Overall Recreational Character.** The forests and mountain slopes of the CNF, KNWR, and State and Borough lands provide a popular recreational setting and contribute strongly to the overall recreational character of the project area. See also the discussion of overall recreational character in Section 3.8.1.1, above. Upland recreational activities throughout the project area include the following:

- Driving for pleasure
- Viewing scenery, wildlife, and natural features
- Trail use (hiking, mountain biking, snowmobiling, skiing, some horseback riding) and camping
- Cabin use (public recreation cabins)
- Hunting
- Winter use
- Dispersed backcountry activities (hiking, hunting, backcountry skiing) both on and off trails

The study conducted for this project identified that viewing wildlife, viewing natural features/scenery, and driving for pleasure are among the top five recreational activities throughout the CNF. “Viewing of scenery” is a major recreation activity in and of itself in the CNF, and as a major component in the overall satisfaction of other activities (HDR and USKH 2013).

CNF is a major recreational resource providing numerous opportunities for upland recreation. Most upland recreational activities in the project area are accessed from the Sterling Highway. Although major use of USFS campgrounds and other USFS facilities in the project area is related to sport fishing and boating, there are also many other activities that draw thousands of visitors through the area, including scenic driving (as high as 200,000 visitors annually on both the Sterling and Seward highways), hiking and trail use (9,000 to 11,000 annual average of users on four area trails), and use of public recreational cabins (around 1,500 annually). Some activities that occur in the CNF are harder to quantify, including snowmobiling, hunting, horseback riding, mountain biking, and dispersed off-trail activities in general (HDR and USKH 2013).

On KNWR lands adjacent to the Sterling Highway between MP 55 and 60, USFWS facilities primarily are focused around fishing at the mouth of the Russian River and providing a visitor contact station for other facilities farther west, outside the project area and not subject to impacts by the Sterling Highway project alternatives. Recreation in the KNWR that is not sport fish- or boating-related consists primarily of wildlife viewing from the road, hiking/backpacking on Fuller Lakes Trail, or dispersed backcountry activities such as hunting. The KNWR Wilderness is the closest Federally designated Wilderness to the majority of the Alaska population. Similar recreation experiences exist on other lands nearby, although these areas are not protected under the Wilderness Act and could be altered more easily in the future..

State and Borough lands in the Cooper Landing area also provide for dispersed recreation activity. Many of the State land units are proposed as additions to the KRSMA and are managed as if they were State park lands. Community use of local trails discussed below often begins on State or Borough lands and leads into CNF lands.

A triangular plot of land located between forks of Bean Creek Road at its intersection with the Sterling Highway (MP 47.7) has been called Helen Rhode Community Wildflower Park. It contains a small pathway and a broken-down picnic table. It is located on DOT&PF Sterling Highway right-of-way and is not a formally permitted use. It is not clear whether it is regularly maintained by any organization or individual, but it is a pleasant patch of open green space in the community.

**Sterling Highway as a Recreation Resource.** The Sterling Highway, which is essential for access to recreation resource areas, is also used for recreation itself. The Kenai River area owes much of its popularity to its easy access via the Sterling Highway's link to Alaska's population centers and major transportation facilities (i.e., airports, rail, and ports). As noted above, CNF has documented scenic driving as an activity that draws as many as 200,000 visitors annually on both the Sterling and Seward highways. Enjoying the scenery from the car is an experience that extends throughout the project area, including KNWR and State lands. Data from CNF forest-wide (USFS 2004a) indicate high participation rates in activities that relate to the experience of driving, and viewing scenery and wildlife, including:

- 60.69 percent of visitors to the CNF participate in viewing wildlife
- 53.54 percent of visitors to the CNF participate in viewing natural features/scenery
- 28.05 percent of visitors to the CNF participate in driving for pleasure

Many of these visitors likely also visited the KNWR and had similar experiences. The Sterling Highway's easy access and proximity to the Kenai River also present drawbacks for recreation. The Sterling Highway is the only road serving communities on the western Kenai Peninsula, and the majority of its traffic is not bound for recreational sites in the Cooper Landing area. These conflicts create safety issues and a sometimes stressful experience that detracts from recreationists' experiences and make some recreational activities difficult—such as leisurely scenic sightseeing for recreational motorists, or travel alongside the river and roadway on foot or by bicycle. An additional concern is that motorists' easy access along the river can contribute to overuse and stream bank erosion at vulnerable locations, or, even more seriously, that traffic carrying toxic materials could create a spill into the Kenai River that impacts the recreational resource; see Section 3.17, Hazardous Waste Sites and Spills.

**Trails.** Trails within the project area consist of four improved trails in the CNF and one in the KNWR, all accessible from the Sterling Highway, and several informal trails and old roads used as trails. Resurrection Pass National Recreation Trail is the most prominent trail in the project area and connects Cooper Landing to a trailhead near Hope. Bean Creek Trail connects to it and is the historic route of the trail. Fuller Lakes Trail is a KNWR trail that, like the Resurrection and Bean Creek trails, lies north of the Sterling Highway. South of the highway are the Russian Lakes Trail, which is another long-distance trail, and the less-known but historic Stetson Creek Trail. A number of backpackers and bikers travel between Resurrection Pass Trail and Russian Lakes Trail using the Schooner Bend Bridge and a short section of the Sterling Highway to the Russian River Campground road as the connecting link. These trails are detailed further in Chapter 4, Section 4(f) Evaluation. Trails that do not have Section 4(f) protection are discussed further in this section. Map 3.8-1 shows the locations of these trails.

The Shackleford Creek/Powerline Trail (originally an access track for a power transmission line) extends from Snug Harbor Road across the lower slopes and benches north of Cecil Rhode Mountain and connects with the Cooper Lake Dam Road.

Several of the trails are interconnected. The Borough and local residents have identified the Art Anderson Slaughter Gulch Trail, in particular, as popular locally, and the 1996 *Land Use Classification Plan* identifies potential trailheads for this trail in the area. The trail appears to cross private land, Borough land, and USFS land, but does not have a formally mapped route. It is about 1.25 miles long measured from the Cooper Landing School up the edge of Slaughter Gulch, sometimes steeply, to the last mountain hemlock trees and alpine areas, where the grade eases.

The Cooper Creek Trail is known by the USFS as the Cooper Lake Dam Road and is classified as a road for maintenance access. The road leaves the Sterling Highway near MP 49.5 and crosses Borough land without restrictions. At the CNF boundary, it is gated and available for permitted vehicle use by Chugach Electric Association only to access the Cooper Lake hydroelectric dam. The general public uses it on foot for recreation. Similarly, the Powerline Trail is an access track associated with the Homer Electric Association transmission line right-of-way. Although typically not maintained as a trail by any agency and typically crossing two or more jurisdictions including private property, these trails are used for recreation, principally by local residents. West Juneau Road and connected USFS logging roads are used more widely for recreation as alternative snowmobile access and horseback access to the Resurrection Pass Trail.

**Campgrounds and Recreation Sites.** Several campgrounds and recreation sites are within or adjacent to the project area. These include four USFS campgrounds. The Cooper Creek Campground (North and South) and Russian River Campground are centrally located in the project area; the pullouts on the west side of the Schooner Bend Bridge serve as overflow parking for the Russian River Campground, and people park there and then hitch a ride, walk, or bike into the campground using the bridge and a short section of highway. Access for the Crescent Creek and Quartz Creek campgrounds is at the eastern edge of the project area at Quartz Creek Road (the two campgrounds are outside the project area). Also included among area recreation sites are Sportsman's Landing boat launch; the Russian River Ferry and associated KNWR parking and small campground; and the Cooper Landing Boat Launch and Day Use Area. These are heavily used facilities; visitor counts for the USFS campgrounds and USFS Russian River day use parking are shown in Table 3.8-5. The USFS campgrounds are located on parcels of land withdrawn by public land order from mineral entry and other uses, specifically for recreational

purposes. In addition to the campgrounds, the CNF includes two similar recreation areas that are not highly developed:

- Juneau Falls Recreation Area (see Map 3.8-1) near mile 4 of the Resurrection Pass Trail, which incorporates the junction of the Bean Creek Trail and Resurrection Pass Trail and provides a backcountry campsite near a scenic waterfall and canyon.
- USFS Kenai River Recreation Area, which lies along both sides of the Sterling Highway between Cooper Creek Campground and Sportsman’s Landing and provides a public use buffer along the river and highway.

**Table 3.8-5. Annual number of visitors at area facilities, 2008–2012**

	2008	2009	2010	2011	2012
Cooper Creek Campground	5,594	5,992	5,900	5,628	5,016
Crescent Creek Campground	1,447	2,538	2,392	2,385	1,790
Quartz Creek Campground	15,197	16,588	16,326	15,645	14,048
Russian River Campground	31,598	24,412	23,218	20,667	20,964
Russian River day use parking area	28,385	32,342	21,594	23,223	22,844

Source: USFS (2012a) reported in HDR and USKH (2013).

The Section 4(f) Evaluation in Chapter 4 provides much greater detail about these park and recreation areas, because all qualify for Section 4(f) protection.

While specific recreation sites are discussed primarily in Chapter 4, a few, such as Sportsman’s Landing, are recreational properties protected under Section 4(f) for which discussion is provided here, because no Section 4(f) “use” is expected by any alternative. The existing highway lies immediately adjacent to the northern edge of the Sportsman’s Landing parcel. A single driveway across the parcel provides access to Sportsman’s Landing (State land) and the adjoining Russian River Ferry (KNWR land). By agreement, KNWR manages both sites: the State boat launch ramp and parking area, and the KNWR’s small passenger ferry that moves sport fishing enthusiasts across the Kenai River to the mouth of the Russian River. This area is popular during salmon runs in the summer and is a source of traffic conflict, with vehicles turning in and out of the parking area and parking on the edges of the highway. USFWS, in its role as a cooperating agency, indicated that the current limitations of the parking lot and the absence of shoulders or other nearby parking help control the amount of use of the Kenai River at Sportsman’s Landing and the Russian River Ferry.

### **3.8.2      *Environmental Consequences***

A *Recreation Analysis* technical report prepared for this project (HDR and USKH 2013) describes park and recreation resources and impacts to them in detail. This section of the Draft SEIS summarizes the impact analysis using a modified format so that this section remains structured like other resource discussions in this section of the SEIS. The analysis that follows focuses on those properties to which FHWA determined that Section 4(f) does not apply. Section 4(f) of the USDOT Act applies to many parks and recreation areas but may not apply if the

facility is not publicly owned, not fully open to the general public, or not significant on a local, regional, or national scale, although such facilities may be important in the community. Chapter 4, Section 4(f) Evaluation, more fully explains the legal background for Section 4(f) and addresses in detail the impacts to the many park and recreation properties protected by Section 4(f). Sportsman's Landing is an important recreational property and is protected under Section 4(f). Most of the alternatives would be located very close to Sportsman's Landing, but none would have a Section 4(f) use of the land. It is therefore discussed in the sections below and mentioned only briefly in Chapter 4.

### **3.8.2.1 No Build Alternative**

#### **Direct and Indirect Impacts**

**Overall Recreational Character.** The recreational character of the Cooper Landing and upper Kenai River area would not be substantially altered. The No Build Alternative would not impact recreational lands or lands proposed as additions to the KRSMA. These lands would continue to function much as they do today, likely with gradually increasing use. Businesses and public recreation sites accessed from the highway today would continue to be accessed directly from the existing highway. To some businesses, this would be an advantage, as they would benefit by spontaneous stops (e.g., for gas or dining). For most recreation sites that are planned destinations, both private (commercial) and public, the continuation of all traffic and projected increased traffic past the entrance would continue a trend that has degraded the overall recreational character of the area: increasing traffic would contribute to an increasingly congested recreational environment, with difficulties during the busy summer season in getting back into the stream of traffic from destinations. Similarly, pulling over to admire the view, parking, driving for pleasure, and walking or bicycling along the highway would be difficult, unpleasant, or virtually impossible.

**Water-Based Recreation.** All Sterling Highway traffic would remain close to the Kenai River throughout the project area. Kenai Lake effects would not change. The No Build Alternative would conform to the *Kenai River Comprehensive Management Plan* (DNR, ADF&G, KPB 1997) recommendation to keep river crossings to a minimum, as no new bridges would cross the Kenai River. Existing bridges are anticipated to be replaced by 2043, which would create construction-related river use restrictions and temporary closure impacts to recreational fishers and boaters, but would not result in any permanent change to water-based recreation. The increased traffic over time would increase the risk of crashes and hazardous material spills that could easily pollute the Kenai River, both as a recreation resource for participants and a business resource for recreation-oriented businesses, and as habitat for salmon and trout species pursued by sport fishing enthusiasts (see Section 3.21, Fish and Essential Fish Habitat). Little change would occur to recreation on the Russian River; turning into and out of the main access points—the Russian River Ferry and USFS Russian River Campground and trailhead—would likely become more challenging as traffic increased. Similar access issues would occur at other access points, including the Cooper Landing Boat Launch and Day Use Area, and the Skilak Lake Road access to Jim's Landing.

**Sterling Highway as a Recreation Resource.** Traffic would continue to increase during the busy summer recreation period, and congestion, traffic noise, exhaust, and dust would continue to detract from the recreational experience.



Safety issues associated with the mix of through-traffic with parked and slow-moving recreational traffic and pedestrians, particularly on the stretch of highway near MP 54–55 (Sportsman’s Landing-Russian River Ferry area), would continue to be a management problem for the DOT&PF, Alaska State Troopers, and the managers of the recreation resources. All recreation facilities—including guiding, lodging, and other businesses centered mostly in the Cooper Landing community (MP 47–50.5) and recreation sites centered mostly in the area between Cooper Creek and the Russian River (MP 51–55)—would remain accessed directly from the existing highway. Conflicts between the needs of local/recreational traffic and through-traffic would continue. The roadway would remain winding and picturesque, but during busy periods would remain difficult to enjoy by car (“driving for pleasure”), on foot, or by bicycle because of other traffic and the need for heightened alertness.

**Trails.** The No Build Alternative would have no impact to trails. The trails would continue to function much as they do today, likely with increasing use and increasing formality of the trails over time. Access to and from trailheads would have the same issues noted in the paragraphs above.

**Campgrounds and Recreation Sites.** Recreation sites are discussed primarily in Chapter 4. Sportsman’s Landing is a recreational property protected under Section 4(f) for which discussion is provided here, because no Section 4(f) “use” is expected by any alternative. The No Build Alternative would have no effect to Sportsman’s Landing. This area is expected to remain popular during salmon runs and to continue to be a source of traffic conflict, with vehicles turning in and out of the parking area and parking on the edges of the highway. These conditions would continue to cause problems both for through-traffic and for stopping recreationists.

### **3.8.2.2 Issues Applicable to the Build Alternatives**

Recreation-related issues are similar across all build alternatives, but notable differences are discussed in the sections below. In general, all build alternatives would alter the existing recreational character of the project area. Each of the build alternatives would create a segment built on a new alignment. The new segment of each alternative would cross existing recreational trails and would cross public lands that people currently use for dispersed recreation. Higher average traffic speeds on new or rebuilt sections would make established roadside recreational activities less pleasant, and long-established roadside parking patterns would be altered. Use of the trails and public lands would be altered, as further described for each alternative below, with complementary detail in Chapter 4, Section 4(f) Evaluation, for those properties that are protected by Section 4(f).

The segment of each alternative built on a new alignment would leave a portion of the “old” highway that would not be rebuilt. In all cases, it is anticipated that approximately 70 percent of traffic would use the segment built on a new alignment and 30 percent would use the unimproved “old” segment, primarily to access local destinations, many of which are public or private (commercial) recreational facilities or recreational support services (gas stations, gift shops, and convenience stores). Although the length of the “old” highway under each alternative would differ, the character of the “old” highway is expected to change in similar ways. The road would function as a local road—a winding, two-lane road with relatively low speed limits suitable for providing access to local destinations. With less traffic on the “old” highway the overall experience of recreational drivers, pedestrians, and bicyclists traveling through the area would be improved. However, the traffic, while considerably less in volume, would still include

large RVs and vehicles with boat trailers, allowing no additional room for pedestrians or bikers using the highway to connect points within the community.

All build alternatives would create a wider area cleared of vegetation, leave a wider paved road surface, and light major intersections at night. All alternatives, including the No Build Alternative, would experience increased traffic over time and with it slightly greater traffic noise. While the highway in all build alternatives would improve access for recreation in this valley, popular for fishing, camping, and trail use, it also would incrementally add to visual and noise effects that would diminish the sense of naturalness, wildness, and solitude. These visual and audible effects to recreationists are particularly important in designated Wilderness on either side of the Kenai River in the KNWR, which is specifically managed to preserve these and other wilderness values (see Section 3.2.1.1 for more on Wilderness management intent).

All build alternatives could restrict or temporarily close driveway and access roads to recreational facilities during construction. Coupled with temporary closures of the Kenai River to boating, under those alternatives that would involve building bridges across the Kenai River, these temporary changes could impact commercial river guides and require greater effort during permitting of these guides by the permitting agencies (principally USFWS and DPOR). Mitigation measures listed under each alternative, below, in 3.7 (River Navigation), and in Chapter 4 (Section 4(f) Evaluation), would minimize these impacts.

These issues are further explained below for each alternative.

### **3.8.2.3 Cooper Creek Alternative**

#### **Direct and Indirect Impacts**

**Overall Recreational Character.** The recreational character of the Cooper Landing and upper Kenai River area would change under the Cooper Creek Alternative scenario. Through-traffic would follow the new highway south of Cooper Landing, and users of the existing highway through the MP 48–50 portion of Cooper Landing (southwest of the Cooper Landing Bridge) would benefit from lower congestion, traffic noise, dust, and exhaust, and increased safety and ease for pedestrians, bicyclists, and drivers. Farther west, between MP 52 and 55, through-traffic and recreational traffic would remain combined. The highway in this popular recreation area would function better than it does today, as a result of planned roadway improvements, but issues of mixing local and through-traffic would remain, as further detailed below.

Access to recreation-oriented sites located on the “old” highway would be easier because the 70 percent of traffic that is through-traffic would be on the new highway. The sites benefitting from easier access/lower congestion would be:

- Cooper Landing Boat Launch and Day Use Area
- Commercial services, lodges, and guide services located in the MP 48–50 portion of Cooper Landing (southwest of the Cooper Landing bridge)
- Cooper Creek Campground

Recreation-oriented sites located along the rebuilt segments on the existing alignment of the Cooper Creek Alternative would have a wider, straighter road with shoulders and turning lanes, but still would be subject to conflicts between through-traffic (70 percent of the traffic) and

recreation/local traffic (30 percent of the traffic). The recreation-oriented sites accessed from the rebuilt sections of the Cooper Creek Alternative would be:

- Commercial services located at Quartz Creek
- Commercial services, lodges, and guide services located in MP 46–48 portion of Cooper Landing (northeast of the Cooper Landing Bridge)
- Gwin’s Lodge
- Russian River Campground
- K’Beq Footprints Heritage Site
- Trailhead for Resurrection Pass Trail
- Sportsman’s Landing-Russian River Ferry
- Trailhead for Fuller Lakes Trail
- KNWR visitor contact station

In addition, the main highway and 100 percent of traffic in the MP 51–55 core area for recreation would remain adjacent to the Kenai River, retaining visual and noise impacts to river users. The improved highway curves and width would reduce congestion issues, but would result in higher average speeds in an area heavily used by recreational traffic during the busy summer recreation period for access to campgrounds, trailheads, interpretive sites, and fishing. Safety issues associated with the mix of through-traffic with parked and slow-moving recreational traffic and pedestrians, particularly on the stretch of highway near MP 54–55 (Sportsman’s Landing-Russian River Ferry area), would continue to be a management problem for DOT&PF, Alaska State Troopers, and the managers of the recreation resources. Informal pullouts within the existing right-of-way would be used to expand the shoulder, so some informal parking and pullouts would no longer be available. Wider shoulders would make it safer for people to park and walk along the road but also would encourage such use. Shoulders in the Sportsman’s Landing area would be posted “No Parking.”

*Public Lands Used for Recreation.* The Cooper Creek Alternative would cross Borough lands classified as recreation and preservation lands south of the community. These lands are not likely to be otherwise developed. An area known as Helen Rhode Community Wildflower Park is a non-permitted green area located in the DOT&PF right-of-way between two branches of Bean Creek Road at its intersection with the Sterling Highway. It includes a broken-down picnic table and small path. The area would be removed under this alternative to realign the highway and reconfigure the intersection. A large area of DOT&PF right-of-way land likely would remain at the intersection of Bean Creek Road with the Sterling Highway; it is likely the area would revegetate and appear similar to the existing wildflower park.

The Cooper Creek Alternative would provide access from the segment built on a new alignment to areas that may be used for hunting, hiking, or other recreational activity that were previously difficult to reach. This would include undeveloped lands on the slopes south of Cooper Landing. While a few hunters and hikers may park on the roadside to access the trails and nearby public lands, most would likely use existing trailheads or parking. While most recreationists would use the proposed pullout trailhead for Stetson Creek Trail provided as part of this project (see Mitigation below and maps in Chapter 4) or the existing access off the “old” highway to Cooper

Lake Dam Road to access the undeveloped lands, some may choose to park on the new highway shoulder. The new highway and new trailhead and parking area may attract additional people to this area, thereby increasing the possibility for human-bear conflicts. Use of the shoulders for parking and recreational activity could create safety risks for recreationists and drivers. However, similar risks in the western portion of Cooper Landing along the existing “old” highway would be reduced because the traffic volume in that area would be 30 percent of the total projected volume for the corridor.

*KRSMA Additions.* The Cooper Creek Alternative would have minimal impact on proposed additions to the KRSMA. The alternative would cross a narrow strip of land along Cooper Creek that is a proposed addition to the KRSMA. This would slightly reshape the land ownership pattern and could diminish prospects for actual addition of this parcel to the KRSMA State park unit through State legislation. However, this land is managed as a natural buffer for the creek, and this seems unlikely to change.

**Water-Based Recreation.** The Cooper Creek Alternative would have little permanent impact to recreation on Kenai Lake, the Kenai River, or the Russian River or along their shorelines. This alternative would conform to the *Kenai River Comprehensive Management Plan* (DNR, ADF&G, KPB 1997) recommendation to keep river crossings to a minimum, as no new bridges would cross the Kenai River. The highway would be widened adjacent to the river in a few locations, and riprap rock armoring of slopes subject to river erosion would be visible to Kenai River floaters and bank fishers in these locations.

The Cooper Creek Alternative would impact the KRSMA by replacing (and widening) two bridges over the Kenai River and by placing fill material or riprap (rock) in the river at several small areas, as described in Chapter 4. Fill areas at the edge of the Kenai River west of MP 55 would be common to all alternatives. The fill/riprap areas would have minimal impact on normal Kenai River processes compared to today, but would impact recreationists who would see the engineered slope and riprap from the river rather than the more vegetated slopes that exist today (note that the highway and its engineered embankment are visible in these areas today but would be expanded).

Indirect effects to KRSMA users could result from the portion of the Cooper Creek Alternative just east of the Russian River Campground entrance where a cut 55 feet high and 350 feet long would be located on the uphill side of the new highway. Although this cut would be located well outside the KRSMA boundary (across the new highway from the Kenai River), it likely would be visible to boaters from some points on the Kenai River over an area of up to 1 mile. Over time, it would grow in with vegetation and look more natural. The new highway in this area would be located up to about 80 feet farther from the Kenai River and at slightly higher elevation than the existing highway alignment. This would be one location along the Kenai River with a distinct change in the visual environment (see Section 3.16), but no substantial impairment to the functions of the KRSMA—including fish habitat and fish movement, river boating, fishing, and viewing—is expected.

**Sterling Highway as a Recreation Resource.** Traffic would continue to increase during the busy summer recreation period, and traffic noise, exhaust, and dust would continue to detract from the recreational experience in many areas. However, the highway would be improved, with turning lanes at key intersections and public recreation destinations. These improvements would, allow for better access to and from recreational sites. The Cooper Creek Alternative would be

routed around a portion of Cooper Landing and around Cooper Creek Campground. Traffic at the access to these areas from the “old” highway would be substantially reduced, with 70 percent of traffic expected to use the new highway. The “old” highway would be retained as a narrow, winding, lower-speed, segment well suited for local access to commercial recreation destinations and to Cooper Creek Campground.

Safety issues associated with the mix of through-traffic and parked or slow-moving recreational traffic and pedestrians, would be reduced because of wider lanes and shoulders and the addition of turning lanes. This would be particularly important on the stretch of highway near MP 54–55 (Sportsman’s Landing-Russian River Ferry area) closest to the popular confluence of the Kenai and Russian rivers. However, all traffic would continue to pass through this area. Conflicts between the needs of local traffic, recreational traffic, and through-traffic would continue, with some drivers likely attempting to use the new (wide) shoulders for parking. The shoulders would improve access for pedestrians and bicyclists, and reduced traffic on the “old” highway segment also would make that segment more usable for pedestrians and bicyclists. During busy periods, the new highway would remain difficult to enjoy by car (“driving for pleasure”) because of other traffic and the need for heightened alertness.

**Trails.** Of the primary maintained trails in the project area, the Cooper Creek Alternative would cross Stetson Creek Trail and would reconfigure the driveway connection to the Resurrection Pass Trail and Fuller Lakes Trail. These changes are addressed in detail in Chapter 4.

Of the more informal trails named in Section 3.8.1, this alternative would cross the Cooper Lake Dam Road and the Shackleford Creek/Powerline Trail. The new highway would cross over the Cooper Lake Dam Road via an overpass (bridge or large culvert). There would be no access ramps from the highway to the Cooper Lake Dam Road, but the overpass would allow continued use of the Dam Road and would not preclude continued informal recreational use. The Cooper Creek Alternative would cross the Powerline Trail twice over about 0.5 mile and would parallel it between the two crossings. Trail use at this location appears to have developed informally (recreational use of the powerline construction/maintenance access track), and it is likely that connection between the two crossing areas would develop informally in the ditch area along the highway, as occurs in many other places along highways near rural Alaska communities. Some users on ATVs or snowmobiles or on foot may cross the highway at grade at these locations. Others may park on the highway to access either the Powerline Trail or Cooper Lake Dam Road. Such uses could pose a risk of collision both for recreationists and for other drivers.

Other trails listed in Section 3.8.1 are not expected to be affected.

**Campgrounds and Recreation Sites.** The Cooper Creek Alternative would use land from the following park and recreation areas protected by Section 4(f), as described fully in Chapter 4:

- Cooper Landing Boat Launch and Day Use Area (temporary occupancy during construction only)
- USFS Kenai River Recreation Area

This alternative also would pass close to or use land from several other recreation sites, as described in the following paragraphs.

*Cooper Creek Campground.* The Cooper Creek Alternative would pass uphill of the Cooper Creek Campground, which could somewhat diminish the campground experience (the “old”

highway would lie to the north and the new highway to the south and west). The new highway would cross the creek canyon at an elevation of approximately 100 feet above the creek and about 2,000 feet upstream from the campground. The new highway would follow the hillside west of the creek toward the existing Sterling Highway, coming within about 1,300 feet of the campground. While forest would screen the highway from being seen during the May–September period that the campground is open, campground users would be aware of its presence, including noise from engines laboring uphill and from trucks downshifting going downhill, and likely the sounds of tires on the bridge abutments, leaving the impression that the campground was backed by a highway and bridge rather than quiet woodland. Traffic on the existing Sterling Highway would decrease, improving the ability to access and depart the Cooper Creek South Campground and making the area safer for pedestrians and bicycles. Noise analysis indicated no substantial noise increase (see Appendix D of this SEIS for a detailed technical study of noise effects), although the traffic noise would come from multiple sides of the campground. The activities, features, and attributes of the campground would remain as they are today and would not be substantially impaired.

*KNWR Facilities.* The effects of the Cooper Creek Alternative on the KNWR visitor contact station and the KNWR Fuller Lakes Trailhead would be identical to those of the other build alternatives (Map 4-3 at the end of Chapter 4 illustrates this area). The widened roadway fill under all four build alternatives would come to the edge of the western cul-de-sac at the visitor contact station, which was built within the highway right-of-way, but there would be no use of the contact station and its grounds. Vehicles on the cul-de-sac would not be within the new highway's clear zone and would therefore not be a safety hazard. The trailhead for the KNWR Fuller Lakes Trail also lies within the Sterling Highway right-of-way and adjacent to the existing highway. There would be no use of the Fuller Lakes Trailhead by any of the alternatives. In both cases, highway traffic noise would be an evident and continued part of the experience at these locations (*Highway Traffic Noise Assessment*, Appendix D of this SEIS), and the highway and its traffic would be readily visible. However, these noise and visual effects would be similar to those experienced at these locations today and under the No Build Alternative. Access to and from the contact station may be improved with an eastbound passing lane, which would allow through traffic to safely go around vehicles slowing to turn into the parking area. Because this alternative would not use any KNWR land outside the existing right-of-way and would not alter the human use pattern in the area, no other effects to KNWR recreation are anticipated. The activities, features, and attributes of the contact station, the trailhead, and KNWR as a whole would not be substantially impaired.

*Sportsman's Landing.* The widened Cooper Creek Alternative, where it would pass the Sportsman's Landing boat launch, would follow the existing highway alignment and would remain immediately parallel to the north side of the Sportsman's Landing parcel. Permanent access to the property would be improved with the addition of a turning lane on the highway. Near Sportsman's Landing and Russian River Ferry—prime river access points—the new highway's 8-foot shoulders could tempt the public to park outside these access point parking lots, which charge a fee and often can be full during prime fishing season. Left unmanaged, this additional informal parking could lead to more people in already crowded areas near the confluence of the Russian River and Kenai River and increase the need for management by USFWS (manager of Sportsman's Landing and Russian River Ferry), DPOR, ADF&G, and USFS. Enforceable No Parking signs would be posted to reduce this problem.



Design year 2043 average traffic noise levels were modeled at a level equal to existing 2012 noise levels (see Section 3.15, Noise). The activities, features, and attributes of Sportsman's Landing would not be substantially impaired.

### **Construction Impacts**

**Overall Recreational Character.** The noise, dust, and detours or pilot cars associated with the construction process would temporarily disrupt the rural recreational atmosphere for many people in the project area. While the construction contractor would be required to maintain access to public recreation sites and recreation-oriented businesses, access could be difficult at times. Under the Cooper Creek Alternative, construction would occur directly at the access points for multiple recreation sites and commercial properties that support recreation.

**Water-Based Recreation.** Bridge construction would result in restrictions on Kenai River use and temporary closures of the river in the vicinity of the bridges being replaced (Cooper Landing and Schooner Bend bridges), for safety. Access restrictions would be short term and temporary, and limited to the period of time when equipment, workers, and temporary structures would be located in the river. Other temporary impacts to recreation would include construction noise, dust, temporary visible water quality impacts, and, in a few locations, construction equipment working in the edge of the Kenai River. During construction, individual planned trips down the Kenai River could be cancelled if the river was closed to navigation at the time a group wished to float the river. Closures could occur over two to four summer recreation seasons. See Section 3.7, River Navigation, for a complete discussion of these impacts and proposed mitigation.

**Sterling Highway as a Recreation Resource.** During reconstruction of highway segments built on the existing alignment, driving for pleasure and access to recreation destinations could be more difficult. The Cooper Creek Alternative has about 10.5 miles that would be reconstructed.

**Trails.** Stetson Creek Trail would be closed temporarily during construction. Access to the upper trail would be maintained, but would cross the construction zone. Trail detours would be likely. The experience of trail users would be degraded for short segments during this time, and any closure would impact trail users intending to use the trail at that time.

Construction activity would require temporary closure of the Cooper Lake Dam Road and Powerline Trail, which would temporarily limit access for recreational activity in the area. Because these routes are informally used for recreation but not managed for recreation, no detours or accommodation are anticipated to be provided during the construction process, and users would have to go to other area trails.

**Campgrounds and Recreation Sites.** The Cooper Creek Alternative would involve temporary closures and recreation use restrictions to the Cooper Landing Boat Launch. Construction would occur within the USFS Kenai River Recreation Area, creating noise and dust impacts and potentially affecting access by recreationists on foot in some areas. See a complete discussion of these two recreation areas in Chapter 4.

*Sportsman's Landing.* The construction contractor would likely need to use the northern edge of the parcel temporarily during construction. Public access to the parcel and along the access road at the northern edge of the parcel would be maintained throughout construction during the summer use season. The relationship of the boat ramp parking facilities to the highway would be unchanged following construction. During construction, those using the parking area, especially those nearest the highway, would experience the noise of heavy equipment and likely some dust.

They may experience traffic delays getting to and from the site. These impacts during construction, including use of the northern edge of the parcel by workers and equipment, would be temporary—much less than the duration of construction of the entire project. No permanent changes to the parcel are anticipated, and no interference with the activities, features, or attributes on even a temporary basis is anticipated. Any disturbance of earth at the northern edge of the property would be revegetated to leave the area in the same condition it is in today. There is no substantial tree buffer now between the highway and parking area, so visual and vegetation changes would be minimal. These impacts have been discussed with the Alaska Department of Fish and Game (ADF&G; land owner) and USFWS (land manager), and all appear to agree that these temporary uses would not cause any important impact (HDR 2009b). If this alternative were advanced, FHWA would seek formal concurrence from both land managing agencies prior to making a final determination to this effect.

### **Mitigation**

Section 4.6 in Chapter 4, Section 4(f) Evaluation, provides extensive mitigation discussion for impacts of the Cooper Creek Alternative to the following properties:

- Kenai River-KRSMA
- Stetson Creek Trail
- USFS Kenai River Recreation Area
- Cooper Landing Boat Launch and Day Use Area

Mitigation measures follow for properties not addressed in the Section 4(f) Evaluation.

**Sportsman’s Landing/Kenai River.** Construction contractors would not park vehicles or stage construction materials at Sportsman’s Landing during the busy summer visitor season, and would not do so at other times of the year without an agreement with ADF&G and KNWR. Enforceable No Parking on Shoulder signs would be posted near Sportsman’s Landing to keep the new highway shoulders from becoming additional parking and thereby keep numbers of people accessing the Kenai River through the Sportsman’s Landing entrance to manageable levels.

**KNWR Facilities.** As with all build alternatives, DOT&PF would work with the KNWR regarding design and construction in the vicinity of the Fuller Lakes Trailhead and visitor contact station to ensure minimal impact. Construction contractors would not park vehicles or stage construction materials at the trailhead or the visitor contact station during the busy summer visitor season, and would not do so at other times of the year without an agreement with KNWR.

**Powerline Trail and Cooper Lake Dam Road.** Notice of construction and trail interruption would be posted near the beginning of the Powerline Trail (off Snug Harbor Road) and near the beginning of Cooper Lake Dam Road (off the existing Sterling Highway near MP 49.6), as well as at the approach to the construction zone (e.g., posted on a tree). DOT&PF would monitor use of the highway shoulder for parking by recreationists as access to these trails. If safety hazards developed, DOT&PF would post No Parking signs near the intersections of these trails with the highway.

#### **3.8.2.4 G South Alternative**

##### **Direct and Indirect Impacts**

**Overall Recreational Character.** The recreational character of the Cooper Landing and upper Kenai River area would change under the G South Alternative. Most through-traffic would follow the new highway north of Cooper Landing. The “old” highway through the community both southwest and northeast of the Kenai Lake outlet would benefit from lower congestion; traffic noise, dust, and exhaust; and increased safety and ease for pedestrians, bicyclists, and drivers. Farther west, from MP 52 to 55, through-traffic and recreational traffic would remain combined, and the highway would function almost identically to the Cooper Creek Alternative.

Access to recreation-oriented sites located on the “old” highway would be easier because the 70 percent of traffic that is through-traffic would be on the new highway and separated from many of the recreational businesses. The sites benefitting from easier access/lower congestion would be:

- Commercial services, lodges, and guiding businesses located in both the MP 46–48 and MP 48–50 portions of Cooper Landing (both northeast and southwest of the Cooper Landing bridge)
- Cooper Landing Boat Launch and Day Use Area
- Cooper Creek Campground

Recreation-oriented sites accessed along portions of the new highway segment and upgraded segments of G South Alternative would benefit from a wider, straighter road with shoulders and turning lanes, but still would be subject to conflicts between through-traffic (70 percent of the traffic) and recreational/local traffic (30 percent of the traffic). The recreation-oriented sites accessed from the rebuilt section of the G South Alternative would be:

- Commercial services located at Quartz Creek
- Gwin’s Lodge
- Russian River Campground
- K’Beq Footprints Heritage Site
- Trailhead for Resurrection Pass Trail
- Sportsman’s Landing-Russian River Ferry
- Trailhead for Fuller Lakes Trail
- KNWR visitor contact station

The G South Alternative would cross Borough lands classified for recreation and preservation north of the community. These lands are not likely to be otherwise developed, and in the *Cooper Landing Land Use Classification Plan* are specifically classified to create a buffer around a presumed highway alignment for this project (CLAPC 1996). The buffer likely would serve to restrain development along the highway and contain development mostly to areas within the existing community. The presumed G South alignment in the land classification plan and the proposed G South alignment discussed in this SEIS are not identical, and the Borough may need to amend its plan to reflect the final alignment.

While most recreationists would use the proposed new trailhead for Bean Creek Trail (see mitigation in Section 4.7 of Chapter 4) to access undeveloped lands on the slopes north of Cooper Landing, some may choose to park on the highway shoulder, particularly in winter, when the trailhead is expected to be closed. This could cause a hazard to recreationists and to other drivers. A short distance west of Juneau Creek, staging areas and an access road necessary for constructing the large bridge have the potential to create permanent, new, and easier public access to the creek area after the work is complete. The construction access areas would be closed following construction (see mitigation for bears in Section 3.22, Wildlife). Regardless of this closure, access on foot in this area likely would be easier than it is today, potentially leading to a new fishing access point, and some recreationists may benefit. Some may also unwittingly place themselves in danger of conflict with brown bears in this area. This could become a recreation management issue for DPOR and the USFS.

*KRSMA Additions.* The G South Alternative would cross lands in the area near Bean Creek and Juneau Creek that are proposed additions to KRSMA, inserting the highway and a large bridge on tall piers across the lower portions of Juneau Creek Canyon, with associated traffic noise and visual impacts, in what is currently a mostly undeveloped area. The highway, and construction access roads into the bottom of the valley for bridge construction, would result in tree cutting and would change the appearance of these lands. The DOT&PF would own the transportation corridor (or control an easement) through these proposed KRSMA additions. This would reshape the land ownership pattern and could make the KRSMA additions area more difficult for DPOR to manage because of increased public access from the highway. USFS lands in this area would be affected similarly. It is possible that placing a highway through the area would diminish the value of the lands as a park in the eyes of State legislators and reduce the prospects for actual addition of these lands to the KRSMA State park unit through legislation.

**Water-Based Recreation.** The G South Alternative would have some permanent impacts to recreation on Kenai Lake, Kenai River, and Russian River or along their shorelines. This alternative would create a new bridge across the Kenai River, which is not in keeping with recommendations in the *Kenai River Comprehensive Management Plan* (DNR, ADF&G, KPB 1997), which seeks to avoid creating new crossings. Most boaters on the river would then pass under two bridges on a day trip instead of one—an increased visual and aesthetic impact and a new obstacle to navigation. The bridge would be located near a gravel bar where boaters sometimes stop to fish or picnic, and the experience at that location would change from natural to roadside. Otherwise, as is true of other alternatives, the highway would be widened adjacent to the river in a few locations, and riprap rock armoring of slopes subject to river erosion would be visible to Kenai River floaters and bank fishers in these locations. These are locations in which the highway is visible today, but it is likely that more fill and riprap would be visible. These fill areas would have almost no impact on normal Kenai River processes but would impact recreationists who would see the riprap from the river rather than vegetated slopes.

Indirect effects on the KRSMA also could result from the portion of the G South Alternative just east of the Russian River Campground entrance where a cut 55 feet high and 350 feet long uphill of the new highway would be required to straighten a curve that does not meet current standards. Although this cut would be located well outside the KRSMA (across the highway from the Kenai River), it likely would be easily visible to boaters from some points on the Kenai River over an area of up to 1 mile. The highway in this area would be located up to about 80 feet farther from the Kenai River and at slightly higher elevation than the existing highway alignment. This would

be one location along the Kenai River with a distinct change in the visual environment (see Key View 15, discussed in Section 3.16, Visual Environment). Overall, impacts of the new bridge to fish habitat and fish movement are expected to be minor, and impacts to river boating and fishing are expected to be changes primarily to the aesthetics of the activity. The visual environment would be somewhat degraded in a few locations, but float trips and fishing on the river would be expected to remain popular.

**Sterling Highway as a Recreation Resource.** Traffic would continue to increase during the busy summer recreation period, and traffic noise, exhaust, and dust would continue to detract from the recreational experience in many areas. However, the highway would be improved with turning lanes at key intersections and public recreation destinations, allowing for better recreational access to and from these sites. The G South Alternative would be routed around the Cooper Landing community in its entirety and around Cooper Creek Campground. Traffic at the access to these areas from the “old” highway would be substantially reduced, with 70 percent of traffic expected to use the new highway. The “old” highway would be a narrow, winding, lower-speed, and aesthetically-pleasing segment well suited for local recreational access and driving for pleasure.

Safety issues associated with the mix of through-traffic with parked or slow-moving recreational traffic and pedestrians would be reduced because of wider lanes and shoulders and turning lanes. This is an issue particularly on the stretch of highway near MP 54–55 (Sportsman’s Landing and Russian River Ferry area) near the popular confluence of the Kenai and Russian rivers. However, all traffic would continue to pass through this area. Conflicts between the needs of local traffic/recreational traffic, and through-traffic would continue, with some drivers likely attempting to use the new (wide) shoulders for parking. The shoulders would improve access for pedestrians and bicyclists, and reduced traffic on the “old” highway segment also would make that segment more usable for pedestrians and bicyclists. During busy periods, the new highway would remain difficult to enjoy by car (“driving for pleasure”) because of other traffic and the need for heightened alertness.

**Trails.** Of the primary trails in the project area, the G South Alternative would cross the Bean Creek Trail. It would pass by the trailheads for the Resurrection Pass Trail and Fuller Lakes Trail, both adjacent to the highway, and would slightly reconfigure the driveway connection for each. These changes are addressed in Chapter 4.

Of the more informal trails in the project area, the G South Alternative would cross the Art Anderson Slaughter Gulch Trail (and the connected Birch Hill Trails). The highway would run between the community of Cooper Landing and the upper trail, about 0.4 mile into the 1.25-mile trail (measured from a de facto trailhead at the school). This would create a barrier for some local users who would not want to cross the highway. Others likely would cross the highway on foot and could pose a risk of pedestrian-vehicle accidents. Others may park on the shoulder to gain access to these trails, another potential safety issue. However, the number of users is thought to be low. Other trails listed in Section 3.8.1 are not expected to be affected.

**Campgrounds and Recreation Sites.** In addition to trails, the G South Alternative would use land from the USFS Kenai River Recreation Area, which is protected by Section 4(f). Impacts are described fully in Chapter 4. This alternative also would pass close to or use land from several other recreation sites, as described in the following paragraphs.

*Sportsman's Landing.* The G South Alternative, where it passes the Sportsman's Landing boat launch, would follow the existing highway alignment and remain immediately parallel to the north side of the Sportsman's Landing parcel. The alignment and relationship to Sportsman's Landing would be identical to those of the Cooper Creek Alternative. No permanent impact is anticipated. See also the discussion below under Construction Impacts. Near Sportsman's Landing and the Russian River Ferry—prime river access points—the highway's new 8-foot shoulders could tempt the public to park outside these access point parking lots, which charge a fee and often can be full during prime fishing season. Left unmanaged, this additional informal parking could lead to more people in already crowded areas near the confluence of the Russian River and Kenai River and increase the need for management by USFWS (manager of Sportsman's Landing and Russian River Ferry), DPOR, ADF&G, and USFS. Enforceable No Parking signs would be posted to reduce this potential problem.

*KNWR Facilities.* The effects of the G South Alternative adjacent to the KNWR visitor contact station and the KNWR Fuller Lakes Trailhead would be identical to those of the other build alternatives (Map 4-3 at the end of Chapter 4 illustrates this area). The widened roadway fill under all four build alternatives would come to the edge of the cul-de-sac at the visitor contact station, which was built within the existing highway right-of-way, but there would be no use of the contact station and its grounds. Vehicles on the cul-de-sac would not be within the new highway's clear zone and would therefore not be a safety hazard. The trailhead for the KNWR Fuller Lakes Trail also lies within the existing Sterling Highway right-of-way and adjacent to the existing highway. There would be no use of the Fuller Lakes Trailhead by any of the alternatives. In both cases, highway noise would be an evident and continual part of the experience at these locations, and the highway and its traffic would be readily visible. However, these noise and visual effects would be similar to those experienced at these locations today. Access to and from these facilities may be improved with the wider, safer road and, in this area, an additional lane. No other indirect effects to the contact station site are anticipated. Because this alternative would not use any KNWR land outside the existing right-of-way and would not alter the human use pattern in the area, no other effects to KNWR recreation are anticipated. The activities, features, and attributes of the contact station, the trailhead, and KNWR as a whole would not be substantially impaired.

### **Construction Impacts**

**Overall Recreational Character.** The noise, dust, and detours or pilot cars associated with the construction process would temporarily disrupt the rural recreational atmosphere of the highway in the project area. While the construction contractor would be required to maintain access to public recreation sites and recreation-oriented businesses, access could be difficult at times. Construction would occur directly at the access points for multiple recreation sites and commercial properties that support recreation.

To construct the Juneau Creek Bridge, a new access road and a bridge construction staging area would be created, and this area would also be used for disposal of unusable overburden and earth materials. Construction would alter the appearance of the area. Although they would be made impassable to motor vehicles, the access road and this area in general could provide greater permanent foot access for recreationists wishing to access lower Juneau Creek for fishing, hiking, and sightseeing. See the discussion above under Direct and Indirect Impacts.



**Water-Based Recreation.** Bridge construction would result in restrictions on Kenai River use and temporary closures of the river to boating in the vicinity of the bridges being replaced, for safety (i.e., Schooner Bend Bridge and new Kenai River bridge crossing). Access restrictions would be short term and temporary, and limited to the period of time when equipment, workers, and temporary structures would be located in the river. However, impacts to individual planned trips down the Kenai River could occur if the river was closed to navigation at the time a group wished to float the river. The construction process also likely would include a temporary construction bridge built on multiple pilings at close spacing as a platform for construction of the new bridge; see Section 3.7.2 in River Navigation for more information.

Other temporary impacts to recreation would include construction noise, dust, and, in a few locations, construction equipment working in the edge of the Kenai River.

**Sterling Highway as a Recreation Resource.** During reconstruction of highway segments built on the existing alignment, driving for pleasure and access to recreation destinations could be more difficult. The G South Alternative has about 9 miles of existing highway that would be reconstructed.

**Trails.** The G South Alternative would cross the Art Anderson Slaughter Gulch Trail and Birch Ridge trails. Trail access across the construction zone would be temporarily restricted. See also the discussion of the Bean Creek Trail in Chapter 4.

**Campgrounds and Recreation Sites.** Because the segment of this alternative built on a new alignment would be located off the existing highway to the north, access to Kenai River-oriented recreation businesses in Cooper Landing would not be adversely affected. Other sites would be affected by construction as discussed in the following paragraphs.

*Sportsman's Landing.* Temporary work would occur along the northern edge of Sportsman's Landing during construction. The highway cut and fill line would be immediately adjacent to the Sportsman's Landing parcel, and the contractor likely would need to use the northern edge of the parcel temporarily during construction. Access to the parcel and along the access road at the northern edge of the parcel would be maintained throughout construction. Permanent access to the property would be improved with the addition of a turning lane on the highway. The relationship of the boat ramp parking facilities to the highway would be unchanged following construction. The facilities would be located immediately adjacent to the highway, as they are today, and 2043 average traffic noise levels are anticipated to be the same as those under the No Build Alternative, a 1-dBA decrease, indistinguishable from today's noise levels (see Appendix D). When noise levels change 3 dBA or less, the change is considered barely perceptible to an adult with normal hearing in an outdoor setting (see Section 3.15, Noise).

During construction, those using the parking area, especially those nearest the highway, would experience the noise of heavy equipment and likely some dust. They likely would experience some delay getting into the site. These impacts during construction, including use of the northern edge of the parcel by workers and equipment, would be temporary—much less than the duration of construction of the entire project. No permanent changes to the parcel are anticipated, and no interference with the activities, features, or attributes on even a temporary basis is anticipated. Any disturbance of earth at the northern edge of the property would be revegetated to leave the area in the same condition as it is today. There is no substantial tree buffer now between the highway and parking area, so visual and vegetation changes would be minimal. These impacts have been discussed with ADF&G (land owner) and USFWS (land manager), and all appear to

agree that these temporary uses would not cause any important impact (HDR 2009b). If this alternative were advanced, FHWA would seek formal concurrence from both land-managing agencies prior to making a final determination on this effect.

### **Mitigation**

The Section 4(f) Evaluation (Chapter 4, see Section 4.6) provides extensive mitigation discussion for impacts of the G South Alternative to the following:

- Kenai River-KRSMA
- Bean Creek Trail
- USFS Kenai River Recreation Area

Other mitigation measures would include the following:

**Sportsman’s Landing/Kenai River.** Construction contractors would not park vehicles or stage construction materials at Sportsman’s Landing during the busy summer visitor season and would not do so at other times of the year without an agreement with the management of the ADF&G and KNWR. Enforceable No Parking on Shoulder signs would be posted near Sportsman’s Landing to keep the new highway shoulders from becoming additional parking and thereby keep numbers of people accessing the Kenai River through the Sportsman’s Landing entrance to manageable levels.

**KNWR Facilities.** As with all build alternatives, DOT&PF would work with the KNWR regarding design and construction in the vicinity of the Fuller Lakes Trailhead, visitor contact station, Jim’s Landing, and Sportsman’s Landing/Russian River Ferry to ensure minimal impact. Construction contractors would not park vehicles or stage construction materials off the highway at these locations during the busy summer visitor season and would not do so at other times of the year without an agreement with the management of the KNWR.

**Art Anderson Slaughter Gulch Trail.** For this alternative, notice of construction and trail interruption would be posted near the trailhead for Slaughter Gulch and Birch Ridge trails (e.g., on a tree and at the school), and along the trail near the construction zone on both the uphill and downhill sides of the highway corridor. Once the project was complete, DOT&PF would monitor use of the highway shoulder for parking by recreationists as access to the Slaughter Gulch and Bean Creek trails. If safety hazards developed, DOT&PF would post No Parking signs near the intersections of these trails with the highway.

### **3.8.2.5 Juneau Creek and Juneau Creek Variant Alternatives**

#### **Direct and Indirect Impacts**

**Overall Recreational Character.** The recreational character of the Cooper Landing and upper Kenai River area would change under the Juneau Creek and Juneau Creek Variant alternatives. Most through-traffic would follow the new highway north of Cooper Landing and north of the primary recreational portion of the upper Kenai River (MP 51–55).

The Juneau Creek and Juneau Creek Variant alternatives would avoid most recreation resources in the greater Cooper Landing area. Access to recreation-oriented sites located on the “old” highway would be easier because the 70 percent of traffic that is through-traffic would be separated on the new highway. The sites benefitting from easier access/lower congestion would be:

- Commercial services, lodges, and guides located both in the MP 46–48 and MP 48–50 portions of Cooper Landing (both northeast and southwest of the Cooper Landing bridge)
- Cooper Landing Boat Launch and Day Use Area
- Cooper Creek Campground
- Gwin’s Lodge
- Russian River Campground
- K’Beq Footprints Heritage Site
- Trailhead for Resurrection Pass Trail
- Sportsman’s Landing-Russian River Ferry

Recreation-oriented sites accessed along the Juneau Creek and Juneau Creek Variant alternatives would benefit from a wider, straighter road with shoulders and turning lanes but still would be subject to conflicts between through-traffic (70 percent of the traffic) and recreation/local traffic (30 percent of the traffic). The recreation-oriented sites located directly on these alternatives would be:

- Commercial services located at Quartz Creek
- Trailhead for Fuller Lakes Trail
- KNWR visitor contact station

In addition, removing the main highway and 70 percent of traffic from this core area for recreation would reduce visual and noise impacts to the Kenai River and would reduce potential for spills into the river (e.g., an overturned fuel delivery truck) that would affect independent and guided recreational boaters and sport fishers. (Risk of spills is addressed in Section 3.17, Hazardous Waste Sites and Spills.) Travelers on the “old” highway through the community both northeast and southwest of the Kenai Lake outlet and throughout much of the upper Kenai River area (westward to MP 55) would benefit from lower congestion, traffic noise, dust, and exhaust, and increased safety and ease for pedestrians, bicyclists, and drivers. Through-traffic and recreational traffic would remain combined west of MP 55 and east of MP 46, but these are areas with fewer recreational facilities or attractions and much less intensive recreational use. Most recreational sites, including campgrounds, trailheads, interpretive sites, and fishing, would be accessed from the “old” (existing) highway. Safety issues associated with the mix of through-traffic with parked and slow-moving recreational traffic and pedestrians would remain but would be much less critical, because the traffic volumes would be reduced by the elimination of most through-traffic.

There would be one difference between these alternatives. The Juneau Creek Variant Alternative would be located immediately north of Sportsman’s Landing. With new wide shoulders, it is possible that some recreationists would park along the new highway overlooking Sportsman’s

Landing rather than along the old highway in the same area, potentially creating a new version of the same safety hazard that exists today. The shoulders on the new highway in this area would be signed “No Parking.” The Juneau Creek Alternative would be located farther north so that this use would not be a temptation. The Juneau Creek Variant Alternative in this area also would be plainly visible as a large, new engineered structure (roadway embankment and overpass) from the Russian River confluence area of the Kenai River, the most popular recreation site in the project area. The existing highway is visible from this area today, but the new highway would be more evident. See the visual impact analysis in Section 3.16, Visual Environment.

The Juneau Creek and Juneau Creek Variant alternatives would cross Borough lands classified as recreation and preservation lands north of the community. Because DOT&PF would reserve access rights to the segment of the highway built on a new alignment, new driveways, trailheads, or parking on these lands would not occur, and these lands likely would remain undeveloped except for the highway. The presumed alignment in the land classification plan and the current alignment for these alternatives are not identical, and the Borough may choose to amend its plan to reflect the final alignment.

The Juneau Creek Variant Alternative would remain within the existing highway easement through the KNWR, with no change in land ownership or management. A difference between the Juneau Creek and the Juneau Creek Variant alternatives (and other alternatives) is that, under the Juneau Creek Alternative, DOT&PF would acquire a new transportation easement across a corner of the KNWR Mystery Creek Wilderness unit. This change in land ownership interest would be a change in land management intent and would require an amendment to the Wilderness boundary set by Congress and managed through the KNWR *Comprehensive Conservation Plan* (USFWS 2010a) or amendment of the management intent expressed in the plan. This would change dispersed recreation opportunities in Wilderness, but the affected area is without trails and without particular recreational attractions at the edge of the Wilderness unit and is not thought to receive a great deal of recreation. Visual impacts of a new cleared area, lighted intersections, and traffic noise would carry over greater distance and diminish the sense of solitude, nature, and wildness in incremental ways at elevations above treeline where Wilderness recreationists would be most aware of them.

These alternatives would impact proposed additions to the KRSMA east of Bean Creek, inserting the highway, with associated noise and visual impacts, in what is currently a mostly undeveloped area and placing Bean Creek in a culvert. Community concepts for formalizing loop trails in this area for skiing and for summer hiking are still developing; the highway in this area could require alteration of these plans.

At the request of managing agencies for mitigation, these alternatives would provide a new trailhead for the Resurrection Pass Trail and a pullout east of Juneau Creek near the Bean Creek Trail (see mitigation in Section 4.6). These would provide access not only to the trails but to off-trail areas that were previously difficult to reach. Access to the Resurrection Pass Trail and upper Juneau Creek valley would change by placing a trailhead 3.4 miles from the existing trailhead. See Chapter 4 for further detail.

While most recreationists would use the proposed new Resurrection Pass Trailhead (see mitigation in Section 4.6) to access undeveloped lands near Juneau Creek, some may choose to park on the highway shoulder, and this could pose safety risks for recreationists and other drivers on the highway.

**Water-Based Recreation.** The Juneau Creek and Juneau Creek Variant alternatives would not replace bridges over the Kenai River or result in any new bridge over the Kenai River. These alternatives would conform to the *Kenai River Comprehensive Management Plan* (DNR, ADF&G, KPB 1997) recommendation to keep river crossing structures to a minimum.

The highway would be widened adjacent to the river in a few locations, and riprap rock armoring of slopes subject to river erosion would be visible to Kenai River floaters and bank fishers. The Juneau Creek and Juneau Creek Variant alternatives therefore would have some impact to KRSMA and its activities. Fill areas at the edge of the Kenai River west of MP 55 would be common to all alternatives. These areas would have almost no impact on normal river processes but would impact recreationists who would see the riprap from the river rather than the vegetated slopes.

**Sterling Highway as a Recreation Resource.** While traffic would continue to increase during the busy summer recreation period, the route of the highway under these alternatives would remove about 70 percent of the traffic and accompanying noise, exhaust, and dust from the Cooper Landing community and from most of the project area's recreation sites. The reduction in traffic on the "old" highway (9–10 miles long under these alternatives) would allow for better access to and from these sites. These alternatives would be routed around the Cooper Landing community in its entirety and around Cooper Creek Campground, Russian River Campground, K'Beq Heritage Site, trailheads, and the Sportsman's Landing-Russian River Ferry area. With reduced traffic at the driveways to these areas, recreational access would be improved. The "old" highway would be a narrow, winding, lower-speed, roadway better-suited for local access and driving for pleasure.

The new highway would minimize driver distractions. While it would be a higher-speed route compare to the "old" highway, it would be suited to driving for pleasure because of reduced side road conflicts, wider lanes and shoulders, and areas with broad mountain views from higher elevation. During busy periods, the new highway would remain difficult to enjoy by car ("driving for pleasure") because of other traffic and the need for heightened alertness.

Safety issues associated with the mix of through-traffic with parked or slow-moving recreational traffic and pedestrians would be substantially reduced because of the reduced traffic volume. This is particularly an issue on the stretch of highway near MP 54–55 (Sportsman's Landing-Russian River Ferry area), at the confluence of the Kenai and Russian rivers. Conflicts between the needs of local traffic/recreational traffic and through-traffic would be effectively eliminated in this area.

**Trails.** Of the primary trails in the project area, the Juneau Creek and Juneau Creek Variant alternatives would cross the Bean Creek Trail and Resurrection Pass Trail and would pass by the trailhead for Fuller Lakes Trail (located in the highway right-of-way). Chapter 4 addresses these changes in detail. These two alternatives also would cross and shorten the interconnected Birch Hill and Art Anderson Slaughter Gulch trails (Map 3.8-1). These alternatives also would cross the West Juneau Road/USFS logging roads via bridges or tunnels, but vehicles on the new highway would not have direct access to the trails/logging roads.

The crossings would be large culverts or bridges that would allow passage by horseback riders who use the West Juneau Road and connected USFS logging roads as alternate access to the Resurrection Pass Trail. Snowmobilers and other winter recreationists also use this route and would be able to continue their use without crossing the highway at grade. However, any passage

beneath a bridge or through a large culvert would accumulate little or no snow (snowless length likely would be 60–70 feet). Snowmobiles can operate on “dry” ground, but a snowless stretch would change the experience. Skiers on this route would need to take off their skis and walk under the highway. Because the highway would cross these trails at two locations at an area a few hundred feet higher than the existing trailhead (coincident with the existing trailhead for Resurrection Pass Trail), some recreationists may park along the highway shoulder for access to these trails, particularly in winter when the new Resurrection Pass trailhead would be closed and when the lower-elevation trailhead may have poorer snow conditions. Recreational use of the shoulder could pose a safety hazard both for recreationists and for other drivers on the highway. The two alternatives would take slightly different alignments through the topographic bench area west of Juneau Creek (area of USFS logging roads), but impacts would be of the same type.

For the Art Anderson Slaughter Gulch Trail (and the connected Birch Hill Trails), the highway would run between the community of Cooper Landing and the upper trail, about 0.4 mile into the 1.25-mile trail (measured from a de facto trailhead at the school). This would create a barrier for some local users who would not want to cross the highway. Others likely would cross the highway on foot and could pose a risk of pedestrian-vehicle accidents. Others may park on the shoulder to gain access to these trails, creating another potential safety issue. However, this is not a formal trail managed by any agency. While there are no counts of users, the number of users is thought to be low.

Other trails listed in Section 3.8.1 are not expected to be affected.

**Campgrounds and Recreational Sites.** In addition to trails, the two Juneau Creek alternatives would use land from the following park and recreation areas protected by Section 4(f), as described fully in Chapter 4:

Juneau Creek Alternative

- Juneau Falls Recreation Area
- Kenai National Wildlife Refuge and Wilderness

Juneau Creek Variant Alternative

- Juneau Falls Recreation Area
- USFS Kenai River Recreation Area

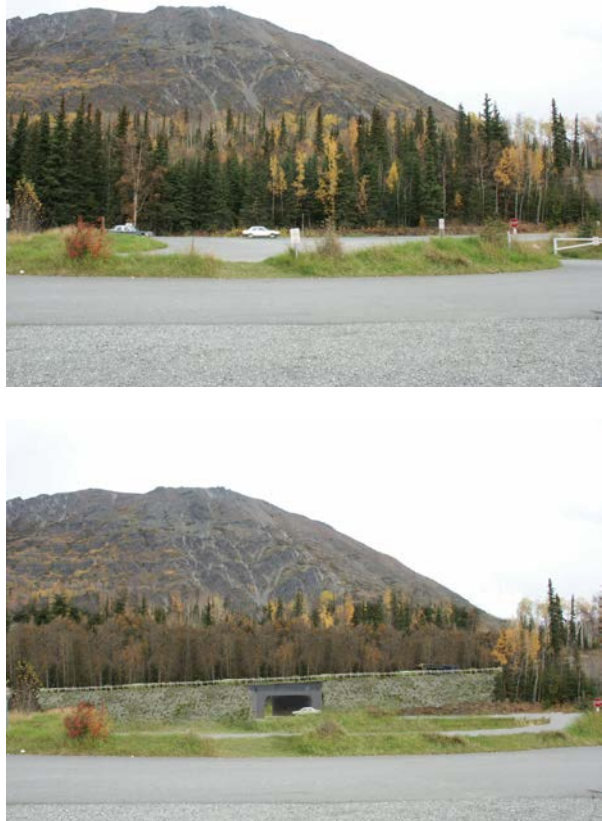
These alternatives would also affect other recreation sites, as described in the following paragraphs.

*Sportsman’s Landing—Impact Specific to the Juneau Creek Variant Alternative.* Under the Juneau Creek Variant Alternative only, the connection between the new highway and the existing highway would be constructed immediately north of the Sportsman’s Landing property (see photo simulation in Figure 3.8-1). See also Map 2.5-6 and Map 4-4 in Chapters 2 and 4, respectively. The result would alter the background appearance of Sportsman’s Landing, but

not the use and function of the site. Traffic noise would be expected at the site, as occurs today. Noise modeling indicated no change in noise level at this site in 2043, which would be 1 dBA lower than the predicted noise level for the No Build Alternative.

**Differences between the Juneau Creek Alternative and Juneau Creek Variant Alternative:** Under the Juneau Creek Variant Alternative, there would be temporary occupancy of the Sportsman’s Landing property and a permanent change to how the driveway connects to the (existing) Sterling Highway. Under the Juneau Creek Alternative, there would be no temporary or permanent impact to the Sportsman’s Landing site.





**Figure 3.8-1. Existing conditions and simulated conditions at Sportsman's Landing.**

The proposed Juneau Creek Variant Alternative would climb to the east and cross over the existing highway. An intersection of the two roads would occur just out of sight on the north side of the new highway.

would be no use of the contact station and its grounds. Vehicles on the cul-de-sac would not be within the new highway's clear zone and would therefore not be a safety hazard. The trailhead for the KNWR Fuller Lakes Trail also lies within the existing Sterling Highway right-of-way and adjacent to the existing highway. There would be no use of the trailhead for Fuller Lakes Trail by any of the alternatives. In both cases, highway noise would be an evident and continual part of the experience at these locations, and the highway and its traffic would be readily visible. However, these noise and visual effects would be similar to those experienced at these locations today. Access to and from these facilities may be improved with the wider, safer road.

The Juneau Creek Alternative would use KNWR land outside the existing right-of-way, as described in brief above under Overall Recreational Character. Although proximity to the trailhead and visitor contact station would be identical to that under the other build alternatives and impacts to recreational activity would be similarly low, the use of KNWR land constitutes a use of Section 4(f) property that would not occur under the other alternatives. For this reason, a detailed discussion of the Juneau Creek Alternative impacts to KNWR appears in Chapter 4.

Near Sportsman's Landing and Russian River Ferry—prime river access points—the new highway's 8-foot shoulders could tempt the public to park outside these access point parking lots, which charge a fee and often can be full during prime fishing season. Left unmanaged, this additional informal parking could lead to more people in already crowded areas near the confluence of the Russian River and Kenai River and increase the need for management by USFWS (manager of Sportsman's Landing and Russian River Ferry), DPOR, ADF&G, and USFS. Enforceable No Parking signs would be posted to reduce this problem.

No permanent adverse impacts to the site are anticipated, and all activities, features, and attributes would be maintained both during construction and permanently. See further discussion below under Construction Impacts.

*KNWR Facilities.* The effects of the Juneau Creek and Juneau Creek Variant alternatives adjacent to the KNWR visitor contact station and the KNWR Fuller Lakes Trailhead would be identical to those of the Cooper Creek and G South alternatives (Map 4-3 at the end of Chapter 4 illustrates this area). The widened roadway fill under all four build alternatives would come to the edge of the cul-de-sac at the visitor contact station, which was built within the existing highway right-of-way, but there

The Juneau Creek Variant Alternative would not use any KNWR land outside the existing right-of-way and would not alter the human use pattern in the area. For these reasons, no other effects to KNWR recreation are anticipated under this alternative; the activities, features, and attributes of the contact station, the trailhead, and KNWR as a whole would not be substantially impaired.

### **Construction Impacts**

**Overall Recreational Character.** The noise, dust, and detours or pilot cars associated with the construction process would temporarily disrupt the rural recreational atmosphere of the highway in limited portions of the project area. Most of the length of the two Juneau Creek alternatives would be built on a new alignment, located away from the existing highway where it passes through the Cooper Landing community and where it passes by the main recreation sites. These alternatives would preserve the existing recreation character between MP 47 and MP 55 during construction, because no construction would occur in these locations, although higher than normal construction traffic likely would occur in this area. Construction would occur directly at the access points for Quartz Creek Road, Fuller Lakes Trail, and the KNWR visitor contact station, and no construction would occur at other recreation-oriented sites. The Juneau Creek Variant Alternative would involve construction directly at the Sportsman's Landing driveway, an impact that would not occur under the Juneau Creek Alternative.

**Water-Based Recreation.** Very little construction impact would occur to water-based recreation. Boaters on Kenai Lake near MP 45 of the Sterling Highway and on the Kenai River between approximately MP 55.5 and MP 58 would see adjacent construction activity, but these alternatives would not involve any river closures or navigation impacts.

**Sterling Highway as a Recreation Resource.** During reconstruction of highway segments built on the existing alignment, driving for pleasure would be more difficult. The Juneau Creek Alternative has about 5 miles that would be reconstructed, and the Juneau Creek Variant Alternative has 5.5 miles that would be reconstructed.

**Trails.** Construction activity associated with the Juneau Creek and Juneau Creek Variant alternatives would interrupt the Art Anderson Slaughter Gulch and Birch Ridge trails and temporarily would interrupt access to these trails. Trail closures may occur for safety purposes.

Use of areas proposed for disposal of cleared vegetation and excess soil, and for construction equipment staging, may affect recreation resources on a temporary basis; such a disposal area is located near the crossing of West Juneau Road by these alternatives. During construction, noise and dust from operation of heavy equipment, chainsaws, pile drivers or rock drilling equipment, and rock blasting equipment are likely and would negatively affect the usually quiet trails.

**Campgrounds and Recreation Sites.** Because the segment of these alternatives built on a new alignment would be away from the existing highway to the north, access to most Kenai River-oriented recreation businesses, campgrounds, and the prime fishing holes would not be adversely affected. There would be no bridge construction over the Kenai River and therefore no river restrictions or closures. There would be some temporary changes, as outlined in the following paragraphs.

*Sportsman's Landing.* For the Juneau Creek Variant Alternative only, temporary construction activity would occur on the northern edge of the Sportsman's Landing parcel. The contractor would use a portion of the parcel temporarily to construct a realigned driveway through the northern edge of Sportsman's Landing and connect it to a realigned existing Sterling Highway.

(The existing highway would be realigned slightly at this location to pass under the new highway and connect to the new highway on its north side.) There would be no change to the parking layout, entrance fee station, or boat launch itself. Access would be maintained to the facility during construction. Ultimately, realigning the driveway and adjacent existing Sterling Highway would improve access to the Sportsman's Landing parcel with separate right- and left-turn lanes for exiting and a straighter driveway more easily managed by trucks towing boat trailers. The work done on the driveway would be scheduled for early spring or fall to avoid the main fishing season. Green space would be reconfigured and replanted but not reduced in area. The affected portion of the site would be fully restored following driveway realignment, and the function of the site is expected to be as good as or better than it is currently. None of the land from this parcel would be incorporated into the transportation right-of-way. These impacts have been discussed with ADF&G (land owner) and USFWS (land manager), and all appear to agree that these temporary uses would not cause any notable impact (HDR 2009b). If this alternative were advanced, FHWA would seek formal concurrence from both land-managing agencies prior to making a final determination on this effect.

### **Mitigation**

The Section 4(f) Evaluation provides mitigation discussion (Chapter 4, Section 4.6) for the following:

#### Juneau Creek Alternative:

- Bean Creek Trail
- Resurrection Pass Trail
- Juneau Falls Recreation Area
- Kenai National Wildlife Refuge

#### Juneau Creek Variant Alternative:

- Bean Creek Trail
- Resurrection Pass Trail
- Juneau Falls Recreation Area
- USFS Kenai River Recreation Area

Other mitigation measures follow.

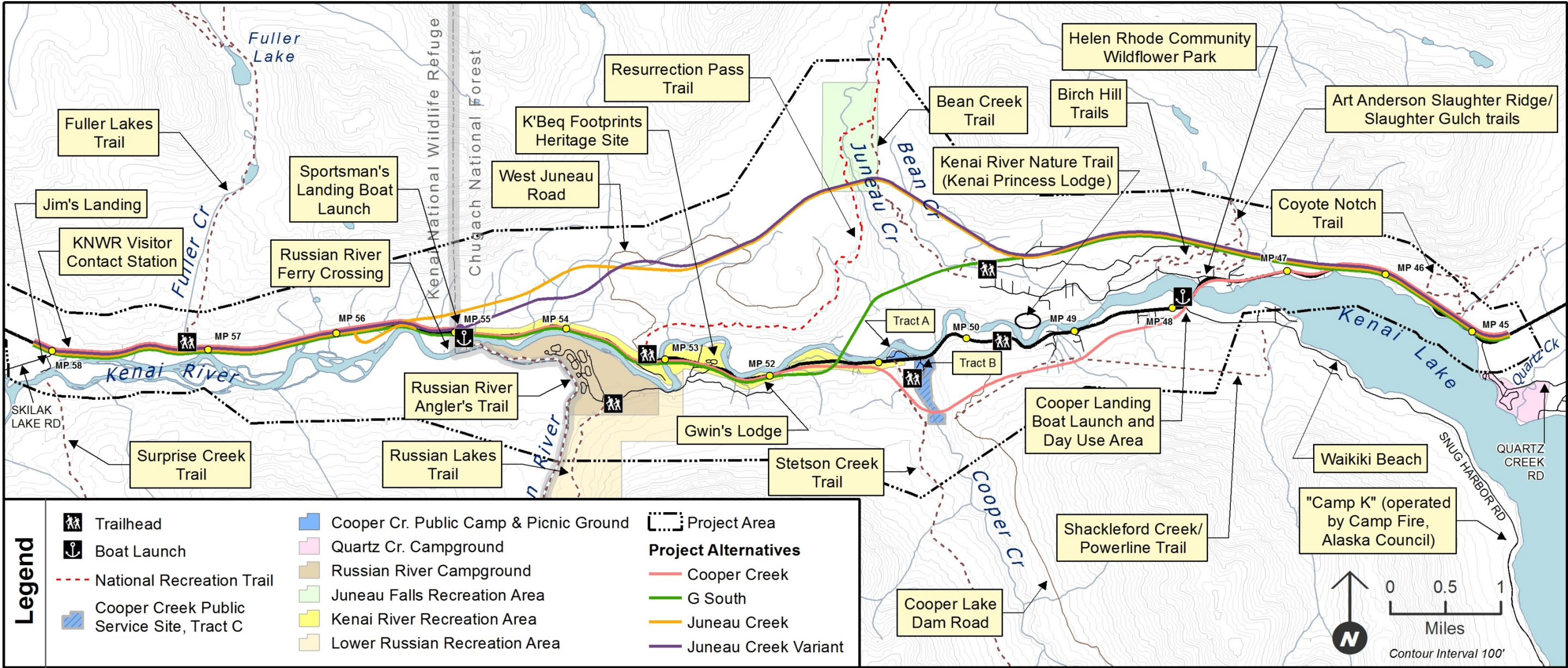
**Sportsman's Landing/Kenai River.** For the Juneau Creek Variant Alternative only, design and construction work at Sportsman's Landing would be undertaken with the proximity of many recreational fishers and boaters in mind. Major construction activity adjacent to the site would be timed as much as possible outside the prime mid-summer fishing season, and driveway work within the site would be completed in fall-winter-spring outside the typical recreation season. The opening beneath the bridge/overpass, overpass materials, and highway embankment slope facing the river would be designed for aesthetics, including revegetation choices and visible surface treatments. Construction contractors would not park vehicles or stage construction materials at Sportsman's Landing during the busy summer visitor season and would not do so at other times of the year without an agreement with ADF&G and KNWR. Enforceable No Parking on Shoulder signs would be posted near Sportsman's Landing to keep the new highway shoulders from becoming additional parking and thereby keep numbers of people accessing the Kenai River through the Sportsman's Landing entrance to manageable levels.

**KNWR Facilities.** For these two alternatives, as with all build alternatives, DOT&PF would work with the KNWR regarding design and construction in the vicinity of the Fuller Lakes Trailhead and visitor contact station to ensure minimal impact to recreational access. Construction contractors would not park vehicles or stage construction materials at the trailhead

or visitor contact station during the busy summer visitor season and would not do so at other times of the year without an agreement with KNR.

**Art Anderson Slaughter Gulch Trail.** For either alternative, notice of construction and trail interruption would be posted near the trailhead for Slaughter Gulch and Birch Ridge trails (e.g., on a tree and at the school), and along the trail near the construction zone on both the uphill and downhill sides of the highway corridor. DOT&PF would monitor use of the highway shoulder for parking by recreationists as access to this trail. If safety hazards developed, DOT&PF would post No Parking signs near the intersection of the trail with the highway.





Map 3.8-1. Recreation sites in the project area

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## **3.9 Historic and Archaeological Preservation**

### **3.9.1 Affected Environment**

#### **3.9.1.1 Background and Identification of Historic Properties**

The assessment of impacts to historic properties must follow Section 106 of the National Historic Preservation Act (NHPA; 36 CFR § 800). Coordination of the NHPA with the National Environmental Policy Act is outlined in 36 CFR 800.8, which states that “Agency officials should ensure that preparation of an...EIS and record of decision includes...identification of historic properties, assessment of effects upon them, and consultation leading to resolution of adverse effects.” An “historic property” is any cultural resource that has been listed in or may be eligible for listing in the National Register of Historic Places (NRHP), as defined in the NHPA (36 CFR § 800.16[I]).

The Federal Highway Administration (FHWA), in consultation with the State Historic Preservation Officer (SHPO), Tribal governments and organizations, and agencies, has determined that the Area of Potential Effect (APE) for the project consists of an indirect APE and direct APE, as shown on Map 3.9-1. The direct APE includes the area in which all aspects of construction, staging, access, and management may occur that could have a direct impact on identified historic properties. This area includes the right-of-way of the four build alternatives, proposed staging, earth materials disposal sites, and borrow sites. For the most part, the right-of-way is 300 feet wide, although in some areas it expands to 500 feet wide or more, to fully encompass proposed cut and fill limits. The indirect APE has been delineated to identify potential secondary effects to historic properties (such as impacts to setting, association, or feeling) as a result of the proposed alternatives. The indirect APE is thus broader in scope than the direct APE, encompassing the entirety of the Squalantnu Archaeological District.

#### **3.9.1.2 Overview: Prehistory and History**

The project area has a rich and varied history, with continued human use from prehistoric times to the present. The earliest site identified to date in the region is at Beluga Point, along Turnagain Arm (ca. 8,000 BP [Before Present]) located south of Anchorage, and to the north of the project area. Although there is a gap following early Holocene occupation, the Kenai Peninsula was later inhabited by Pacific Eskimos, who may have been related to coastal groups of Cook Inlet, as well as having ties to the Norton culture of the Bristol Bay region (CRC 2010). House depressions along the Russian River have documented this presence dating from 1,750 to 1,850 years ago (CRC 2010). Eskimos in the upper Cook Inlet and on the Kenai Peninsula were later displaced by Dena’ina people, who appear in the archaeological record around 1,000 years ago (CRC 2010). Ethnographic and oral history accounts from Dena’ina people confirm the ancestral use of the Kenai Mountains and river area, and its cultural importance (CRC 2010).

In the Kenai region, during the winter the Dena’ina lived in rectangular, semi-subterranean dwellings made of split logs, with roofs of moss, dirt, and sod (CRC 2010). These main houses had one or more sleeping rooms, with attached bath houses. Summer dwellings were smaller, tent-like structures of lashed-together poles covered with skins and bark, which also served as smoke houses. Summer communal bath houses were also constructed (CRC 2010). The Dena’ina

constructed temporary semispherical lodges out of bent alder and spruce roots, covered with skins and bark; sometimes these were built in round shapes in the mountains for sweat bathing. Food caches were constructed both as small houses on posts with log ladders, and as underground pits lined with moss, grass, and birch bark. Salmon was the principal food of the Dena'ina, and they traveled up the Kenai River to hunt and fish (CRC 2010).

Historic-era exploration of the Kenai River area first occurred in 1848 and 1850 when a Russian mining engineer, Petr Doroshin, prospected around Kenai and Skilak lakes. However, Doroshin's meager discoveries and the difficulty of transporting mining supplies to the area squelched any further Russian interest in mining in the area (CRC 2010). American trappers began exploiting the region following the sale of Alaska to the United States, but permanent interest in the area did not occur until American miners began looking for gold. Prospecting along the Kenai River in the 1870s recovered little gold; however, Joseph M. Cooper stayed in the area long enough to prospect and establish a trading post at the site of present day Cooper Landing (CRC 2010). By the 1890s, mining efforts increased, and limited finds of gold led to a rush, which led to the towns of Sunrise and Hope being established, as well as mines at the northern shore of Turnagain Arm near Girdwood (CRC 2010). The later Klondike discovery of gold initially lured prospectors away from the Kenai Peninsula, but many returned after facing difficulties accessing the Klondike.

Later prospecting led to established mines, including the Kenai Mining Company in 1905. Later mining led to the establishment of the Kenai Dredging Company in 1911. The first permanent non-Dena'ina residents settled around this time, building cabins associated with mining claims on Kenai Lake and the Kenai River. The first homestead applications occurred in 1915, and homesite platting followed in 1918 (CRC 2010). By 1920 the area between Quartz Creek and the Russian River was home to 25 people, and the area south of the Kenai Lake outlet became known as "the Landing" or "Cooper's Landing" (CRC 2010). Early transportation routes and plans were developed in the 1920s, with plans to build 22 miles of road from Moose Pass to the Russian River (CRC 2010); however, construction was delayed until the 1930s. Dog sled trails were built by the U.S. Forest Service (USFS) from Moose Pass to Cooper Landing, with truck routes following, and eventually a year-round maintained road was established in 1941 (DOT&PF 1982, CRC 2010). With the arrival of modern highways in the 1940s and 1950s, roadhouses were built to accommodate travelers, as well as gas stations, lodges, and ferry operations. The Post Office and school, which originally opened in the 1920s, were opened and closed intermittently based on demand (CRC 2010).

Although mining activity slowed with the start of World War I, mining work continued into the 1930s (CRC 2010). Mining efforts, however, virtually stopped during World War II, but began again in the 1950s. With additional regulations for water and waste treatment, additional costs accrued to the mining operations, and many small commercial mining operations went out of business (CRC 2010). Mining claims were reinitiated in the 1970s and 1980s.

Additional homesteads and homesites were made available by the USFS in the 1930s and 1940s, but with only "summer residence" permits granted. By 1950, the Sterling Highway was a "modern highway," providing increased access to travelers along the Kenai Peninsula (CRC 2010). Homestead sites and businesses continued to increase with demand throughout the latter half of the twentieth century.

The project area is widely recognized for its cultural heritage, including both Alaska Native prehistory and historic Russian and American prospecting. The Sterling Highway is a designated State Scenic Byway in part for its cultural features, and the entire area is encompassed within the Kenai Mountains–Turnagain Arm National Heritage Area, designated by Congress (see Section 3.2.1.7 of Land Use Plans and Policies). These designations do not add further protections for cultural resources, but recognize the important cultural backdrop of this area.

### **3.9.1.3 Cultural Resources Inventory**

Efforts to identify historic properties in the project area have included historical research, reconnaissance and intensive surveys, site testing, and excavation. Investigations in the general project area have included work by the U.S. Bureau of Indian Affairs, State of Alaska Office of History and Archaeology (OHA), U.S. Fish and Wildlife Service (USFWS), USFS, and Cultural Resource Consultants (CRC; working on the current Sterling Highway Milepost [MP] 45–60 Project). The first archaeological surveys of proposed realignments of the Sterling Highway were conducted in 1978 and 1979 by archaeologists from the OHA. During the 1980s, there were several surveys related to proposed highway realignments, including yearly surveys and/or excavations by OHA between 1985 and 1989. More recently, Charles Holmes of OHA surveyed and tested sites along the Juneau Creek Alternative in 2000, and Douglas Reger (consultant to the Alaska Department of Transportation and Public Facilities [DOT&PF]) surveyed the Cooper Creek and G South alternatives in 2002 and 2003, respectively. Past consultations between the SHPO and DOT&PF on the eligibility of identified sites and project effects took place between March 1992 and October 1995.

An additional survey along the Juneau Creek Alternative at the Juneau Creek crossing was completed between July and August 2005, to include areas that could be affected by potential shifts in bridge alignments due to design requirements. Field verification of previously recorded sites also was completed in 2005. Surveying and mapping were completed in 2009 to address the more recently proposed Juneau Creek Variant Alternative, and an additional field survey in 2014 was completed to address a modified segment of the G South alignment. A comprehensive archaeological survey report documenting surveys completed for the proposed project's current Draft Supplemental Environmental Impact Statement (SEIS) phase is available, but is intended for limited distribution because it contains confidential information protected by law.

The historic properties identified in the project APE and determined eligible for listing in the NRHP are listed below. See Map 3.9-1, and see Maps 4-1, 4-6, 4-7, 4-8, and 4-12 in Chapter 4. Note that some historic properties and districts are not shown on the maps to help protect sensitive sites.

- **Sqilantnu Archaeological District.** The Sqilantnu Archaeological District comprises hundreds of archaeological sites representing late prehistoric to early historic Dena'ina occupation, and the district boundaries encompass virtually the entire project area downstream of the Kenai Lake outlet and up to approximately 1,000 feet elevation on both sides of the Kenai River Valley. There are hundreds of contributing historic properties (such as collections of Dena'ina cache pits or house depressions), including thousands of individual cultural features within the sites, that make up the archaeological district. The district and all its contributing historic properties have been determined eligible for listing in the NRHP. The Confluence Traditional Cultural Property (TCP) and the New Village TCP, also listed below as separate historic properties, contribute to the Sqilantnu

Archaeological District. Several contributing Sqilantnu sites, also located within the boundaries of identified TCPs, are used for cultural interpretation activities by the Kenaitze Indian Tribe, including the Beginnings and K’Beq Footprints Heritage Sites. The Russian River Land Act of 2002 conveyed the “archaeological estate” of some 500 acres of the Sqilantnu Archaeological District within the Kenai National Wildlife Refuge boundary to Cook Inlet Region, Incorporated (CIRI), the regional Native corporation, and assigned ownership of recovered artifacts throughout the district to CIRI.

- **Sqilantnu Russian River Confluence Traditional Cultural Property.** The Sqilantnu Russian River Confluence TCP is a large area encompassing the confluence of the Kenai and Russian rivers and lands nearby. The TCP is an area that holds an integral relationship with the beliefs and practices of the Kenaitze. Additionally, the sites contained within the Confluence TCP are significant for the association they continue to hold with Kenaitze cultural beliefs, practices, education, and history. The TCP is also recognized by the Kenaitze for its location as a meeting point for many cultures, from pre-history through today. As such, the entire site, including the existing Sterling Highway, the Russian River Ferry, and other modern and non-Native elements, are considered part of the TCP. In 2002, the Russian River Land Act recognized the “abundant archaeological resources of significance to the Native people of the Cook Inlet Region, the Kenaitze Indian Tribe, and the citizens of the United States” of the lands near the confluence of the Kenai and Russian rivers.
- **New Village Traditional Cultural Property.** The New Village TCP is the site of the last traditional Kenaitze village in the Sqilantnu District and upper Kenai River area. Its residents moved downstream in 1905, when the last occupants moved to Kenai. New Village is also significant as the location where the Susten Camp (a Kenaitze cultural education and youth camp) first began, with collaborative excavations of archaeological resources by Kenaitze elders, youth, and the USFS. The Susten Camp’s role at the site is an important link, providing continuity between the past and present, passing cultural heritage on to future generations.
- **Kenai Mining and Milling Company Historic District.** The historic district encompasses lands near Cooper Creek, including several historic mining pits and building foundations.
- **Charles G. Hubbard Mining Claims Historic District.** The historic district encompasses several historic mining claims along a reach of the Kenai River, including several prospect pits.
- **Stetson Creek Trail.** The historic trail provided access up Cooper Creek and Stetson Creek and provides access to mining claims today. It is still used recreationally.
- **Bean Creek Trail.** The Bean Creek Trail is the southern end of an historic trail from Cooper Landing to Hope. Most of the trail from Cooper Landing to Hope is now known as the Resurrection Pass National Recreation Trail. However, where the USFS re-routed the Resurrection Pass Trail to the west side of Juneau Creek, the Bean Creek Trail follows the historic route on the east side. The Bean Creek Trail is functional and continues to be used recreationally. The USFS has re-routed the last half-mile of the Bean Creek Trail to allow

for better public access via Slaughter Ridge Road; the historic route heading south is within private property.

- **Gwin’s Lodge.** The lodge, located near MP 52, is an historic Alaska roadhouse dating from the early days of the Sterling Highway. The building (but not the surrounding land) is considered historic property.
- **Broadview Guard Station.** The Broadview Guard Station is an historic Chugach National Forest property used in the past as a fire lookout, overlooking Kenai Lake. It is located near MP 46 overlooking Kenai Lake. The building (but not the surrounding land) is considered historic property.

Consulting parties (see next subsection) have agreed that a phased approach to identification of individual historic properties will be implemented, particularly for subsurface sites associated with the Sqilantnu Archaeological District. That is, while the current identification efforts are sufficient for the Draft SEIS, more identification efforts may occur once a single, preferred alternative has been selected.

#### **3.9.1.4 Agency and Tribal Coordination**

DOT&PF and FHWA have conducted Section 106 consultation with the SHPO, the Kenaitze Indian Tribe, the Salamatof Tribal Council, Cook Inlet Tribal Council, Kenaitze Native Association, CIRI, USFWS, USFS, and the Cooper Landing Historic Society. DOT&PF and FHWA also have consulted with the Russian River Land Act Memorandum of Understanding (MOU) Group, comprised of the Kenaitze Indian Tribe, CIRI, USFWS, and USFS.

#### **3.9.1.5 Section 4(f) Protection**

Section 4(f) of the U.S Department of Transportation (USDOT) Act provides an additional layer of protection for cultural resources in or eligible for listing in the NRHP (and for archaeological properties identified for preservation in place), prohibiting use of such properties for transportation projects unless there is no feasible and prudent avoidance alternative. Evaluation under Section 4(f) is required for any such historic property. Certain parks, wildlife and waterfowl refuges, and recreation areas also are afforded protection under Section 4(f). For this project, FHWA has determined that Section 4(f) protection applies to all of the historic properties listed in the preceding section and to park, recreation, and Kenai National Wildlife Refuge properties as indicated in Table 3.8-1, in Section 3.8, Parks and Recreation Resources. Chapter 4 is dedicated to evaluation of all affected Section 4(f) properties.

### **3.9.2 Environmental Consequences**

#### **3.9.2.1 No Build Alternative**

##### **Direct and Indirect Impacts**

Several historic properties are located within the existing highway right-of-way, and under the No Build Alternative, routine scheduled maintenance (such as brush clearing, bridge replacement, and other minor modernization projects) could disturb or bury historic properties adjacent to the highway. The following historic properties could be adversely affected because the existing highway right-of-way overlaps them:

- Kenai Mining and Milling Historic District
- Charles G. Hubbard Mining Claims Historic District
- Sqilantnu Archaeological District
- Sqilantnu Russian River Confluence TCP

### **3.9.2.2 Issues Applicable to the Build Alternatives**

The impact analysis for historic properties is based on the definition of adverse effect found in 36 CFR § 800.5, Assessment of Adverse Effects, which states:

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

Historic properties (i.e., sites determined eligible for listing in the NRHP) include prehistoric and historic cultural resources that are either individually eligible or are contributing elements to larger historic or archaeological districts, or both. Section 4(f) protection applies to virtually any historic property found eligible for listing in the NRHP, as stated in Section 3.9.1.5, above. See Chapter 4, Section 4(f) Evaluation, for more details on these properties. Adverse effects to historic properties may occur through direct and indirect impacts to a site and/or district that would diminish the qualities that cause a property to be eligible for NRHP listing.

Preliminary design of project alternatives includes earthwork estimates for removing existing soil (cut) and depositing material (fill) to be consistent with roadway design criteria and current highway standards. Cut-and-fill limits for each alternative were compared to cultural and historic site boundary locations in the project area; where cut-and-fill limits intersect, encompass, or are adjacent to existing site boundaries, a determination of adverse effect was made for the particular site under that alternative. Fill placement or excavation activity would disturb existing site conditions, compromising the integrity of buried eligible cultural sites.

Excavation and fill placement under all build alternatives would directly impact sites included in the Sqilantnu Archaeological District and Russian River Confluence TCP. These historic properties have been determined eligible for listing in the NRHP based on their association with important patterns of Alaska history. Excavation and fill placement would adversely affect the sites' integrity as features contributing to their association with broader historic patterns.

An assessment of potential visual impacts to character defining features of historic properties located in the direct APE for each alternative is included in a *Recommendations of Effect to Historic Properties* document (HDR 2010d). Visual assessments were not completed at archaeological resources, as the attributes of these sites lie primarily in their information potential and association, and not their overall above-ground setting. However, one historic property was identified as a place of cultural significance, in part due to setting and visual association, and was evaluated for potential visual impacts. This site was later identified, through consultation with the Kenaitze and Russian River Lands Act MOU Group, as contributing to the Sqilantnu Russian River Confluence TCP.



A comprehensive cultural resources survey report prepared for this project documents surveys completed for the proposed project's current Draft SEIS phase (CRC 2010). Due to the sensitive nature of cultural site information, this report is confidential and not available for public distribution.

The subsections below briefly summarize the impacts of each alternative. Impacts to historic properties would occur during construction and would result in permanent loss of the site or the information contained within an archaeological site. Therefore, direct impacts and construction impacts are considered the same. Historic properties are further protected under Section 4(f) law and therefore are also addressed in Chapter 4, Section 4(f) Evaluation. In Chapter 4, Table 4.8-13 provides a summary overview of impacts discussed for each alternative below.

### **Construction Impacts**

Any impacts to archaeological sites and historic properties occurring during construction would be considered direct impacts and are discussed above in Section 3.9.2.2.

### **Mitigation**

FHWA, in consultation with SHPO, Tribal governments and organizations, the Russian River Lands Act MOU Group, land managing agencies, and other identified Section 106 consulting parties, has committed to developing an agreement document to address adverse effects to identified historic properties, in accordance with Section 106 of the NHPA. The Section 106 consultation is ongoing. The Federal Advisory Council on Historic Preservation will be invited to participate with other consulting parties in formation of the agreement document. An agreement document addressing adverse effects is not expected to be finalized until a single preferred alternative is selected in the Final Supplemental Environmental Impact Statement. Consulting parties have agreed that a phased approach to identification of historic properties will be implemented. That is, while the current identification efforts are sufficient for the Draft SEIS, it is intended that more identification efforts may be undertaken once a single alternative is selected. The agreement document would prescribe any additional identification efforts to be implemented for the selected alternative as well as methods for the resolution of adverse effects to historic properties. It would address jurisdictional and compliance responsibilities with the Archeological Resource Protection Act and the Native American Graves Protection Act. It would address curation requirements related to any artifacts discovered during road construction. The agreement document will be completed prior to the Record of Decision (ROD) and will be referenced in the ROD.

For any alternative, the construction contract would contain the provision: "should cultural or paleontological resources be discovered as a result of this activity, all work that could impact these resources will halt and the DOT&PF Project Engineer and SHPO will be notified immediately." Work would not resume at such sites until consultation was conducted and stabilization and disposition of materials was resolved among the FHWA and appropriate Section 106 consulting parties. Cultural material and human remains, should they be found during construction, would be handled in accordance with discovery and curation procedures and stipulations detailed in the agreement document developed among FHWA, SHPO, Kenaitze Indian Tribe, and other signatories and Section 106 consulting parties.

### **3.9.2.3 Cooper Creek Alternative**

#### **Direct and Indirect Impacts**

The following would be adversely affected by the proposed Cooper Creek Alternative:

- The **Kenai Mining and Milling Company Historic District**, where the highway embankment would cut into and bury contributing district features of a roadbed/flumeway and a trail segment. (See Section 4.2.1 for definitions of NRHP criteria, Section 4.2.16 for more details on this historic property, and Section 4.5.2 for impacts to the historic property associated with the Cooper Creek Alternative.)
- The **Stetson Creek Trail**, where the highway cut and embankment would cut into, cover, and affect approximately 1,250 linear feet of historic trail. (See Section 4.2.14 for more details on this historic property and Section 4.5.2 for impacts to the historic property associated with the Cooper Creek Alternative.)
- The **Charles G. Hubbard Mining Claims Historic District**, where the widened highway would cut into and affect the location of prospect pits and trenches that have been identified as contributing district features. (See Section 4.2.15 for more details on this historic property and Section 4.5.2 for impacts to the historic property associated with the Cooper Creek Alternative.)
- The **Sqilantnu Archaeological District**, where the widened highway would cut into or intersect and affect 28 contributing district prehistoric sites. (See Section 4.2.11 for more details on this historic property and Section 4.5.2 for impacts to the historic property associated with the Cooper Creek Alternative.)
- The **Confluence Traditional Cultural Property**, where the widened highway and expected higher average vehicle speeds would alter the existing feeling and association within the TCP and visually alter the landscape in an incremental way. However, the highway is considered part of the TCP as the modern mechanism for bringing cultures together in the river confluence area. The widened highway would affect several archaeological sites that contribute to the TCP, a subset of the same sites listed above for the larger Sqilantnu District.

In considering potential visual impacts, the Cooper Creek Alternative is considered consistent with the active character of the existing corridor through Cooper Landing, which already experiences adjacent highway traffic. The Cooper Creek Alternative thus would not introduce new visual impacts in the APE that would affect historic properties. The proposed Cooper Creek Bridge and its approaches are inconsistent with the surrounding natural setting; however, most views of the Cooper Creek approaches to the crossing would be obscured by dense forest vegetation from identified historic properties, which are located primarily in or near the existing highway corridor in the project area. Therefore, there are no identified visual effects to historic properties (buildings and structures) under the Cooper Creek Alternative. The Cooper Creek Alternative would provide new access across high bench lands south of the Cooper Landing community and within the Sqilantnu Archaeological District. No historic properties are currently documented in this area. Therefore, no indirect impacts are anticipated. Further consultation and evaluation would occur during the development of an agreement document (see Section 3.9.2.2).

**Section 4(f) Considerations.** The Cooper Creek Alternative, like all the build alternatives, would reconstruct the existing highway near the Broadview Guard Station. It also would reconstruct the existing highway adjacent to Gwin’s Lodge. In both cases, there would be no use of the property on which these historic buildings sit, and no use of the historic structures themselves. FHWA has determined through the Section 106 process that there would be no adverse effect to these buildings; under Section 4(f), proximity impacts would not be so severe that the activities, features, or attributes of the historic properties would be substantially impaired. Therefore, these properties are not addressed in Chapter 4, Section 4(f) Evaluation.

### **Construction Impacts**

Any impacts to historic properties occurring during construction would be considered direct impacts and are discussed above.

### **Mitigation**

Mitigation will be developed to address adverse effects under an agreement document, as discussed above in Section 3.9.2.2. As recreation mitigation for effects to the Stetson Creek Trail, the trail would be altered/rerouted and given a new pullout trailhead. It would remain a useable route. See detail in Section 4.6 for further discussion. Historic properties are protected under Section 4(f) of the USDOT Act as well as under Section 106 of the NHPA. DOT&PF and FHWA therefore have also considered potential mitigation measures for Section 4(f) purposes, as described in Section 4.6.

#### **3.9.2.4 G South Alternative**

##### **Direct and Indirect Impacts**

The following historic properties would be adversely affected by the proposed G South Alternative:

- The **Bean Creek Trail**, where the highway embankment would cross the trail, effectively truncating it and burying it. (See Section 4.2.5 for more details on this historic property and Section 4.5.3 for impacts to the historic property associated with the G South Alternative.)
- The **Charles G. Hubbard Mining Claims Historic District**, where the widened highway would affect prospect pits and trenches that have been identified as contributing features of the historic district. (See Section 4.2.15 for more details on this historic property and Section 4.5.3 for impacts to the historic property associated with the G South Alternative.)
- The **Sqilantnu Archaeological District**, where the widened highway would affect 25 contributing district prehistoric sites. (See Section 4.2.11 for more details on this historic property and Section 4.5.3 for impacts to the historic property associated with the G South Alternative.)
- The **Confluence Traditional Cultural Property**, where the widened highway and expected higher average vehicle speeds would somewhat alter the existing feeling and association within the TCP and visually alter the landscape in an incremental way. However, the highway is considered part of the TCP as the modern mechanism for bringing cultures together in the river confluence area. The widened highway would affect

several archaeological sites that contribute to the TCP, a subset of the same sites listed above for the larger Sqilantnu District.

In considering potential visual impacts, the G South Alternative is considered consistent with the active character of the existing corridor through the project area, which already experiences adjacent highway traffic. However, the proposed approaches and bridge over Juneau Creek associated with the G South Alternative, along with the new approaches and bridge over the Kenai River, are inconsistent with the current character, as they occur in an undisturbed area north and west of the Cooper Landing community. The approaches to the Juneau Creek crossing for the G South Alternative would introduce a new highway corridor with visible bridge crossings in the project area that may otherwise be devoid of similar features. However, most views of the G South Alternative's approaches to the Juneau Creek crossing would be obscured by dense forest vegetation from identified potential historic properties, located primarily in or near the exiting highway corridor in the project area. Therefore, no visual effects to historic properties (buildings and structures) have been identified under the G South Alternative.

The G South Alternative would provide new access across lands north and west of the Cooper Landing community and within the Sqilantnu Archaeological District. No indirect impacts are anticipated. Further consultation and evaluation would occur during the development of an agreement document (see Section 3.9.2.2).

**Section 4(f) Considerations.** The G South Alternative, like all the build alternatives, would reconstruct the existing highway near the Broadview Guard Station. It also would reconstruct the existing highway near New Village TCP and Gwin's Lodge. In all three cases, the alternative has been designed to avoid impacts, and there would be no effect or use of the property on which these historic properties sit, and no use of the historic properties themselves. FHWA has determined through the Section 106 process that there would be no adverse effect to any of these three properties; and under Section 4(f), proximity impacts would not be so severe that the activities, features, or attributes of the historic structures or TCP would be substantially impaired. Therefore these properties are not addressed in Chapter 4, Section 4(f) Evaluation.

### **Construction Impacts**

Any impacts to archaeological sites and historic properties occurring during construction would be considered direct impacts and are discussed above.

### **Mitigation**

Mitigation to address adverse effects will be developed under the agreement document discussed above in Section 3.9.2.2. As recreation mitigation for effects to the Bean Creek Trail, the trail would be connected under the highway (see detail in Section 4.6). Historic properties are protected under Section 4(f) of the USDOT Act as well as under Section 106 of the NHPA. DOT&PF and FHWA therefore have also considered potential mitigation measures for Section 4(f) purposes, as described in Section 4.6.

#### **3.9.2.5 Juneau Creek Alternative**

### **Direct and Indirect Impacts**

The following historic properties would be adversely affected by the proposed Juneau Creek Alternative:

- The **Bean Creek Trail**, where the highway embankment would cross the historic trail, effectively truncating it and burying it. (See Section 4.2.5 for more details on this historic property and Section 4.5.4 for impacts to the historic property associated with the Juneau Creek Alternative.)
- The **Sqilantnu Archaeological District**, where the highway would affect 13 contributing district prehistoric sites. (See Section 4.2.11 for more details on this historic property and Section 4.5.4 for impacts to the historic property associated with the Juneau Creek Alternative.)
- The **Confluence Traditional Cultural Property**, where the new highway would pass through the undeveloped northern edge of the TCP and would affect several archaeological sites that contribute to the TCP, a subset of the same sites listed above for the larger Sqilantnu District. Within the TCP, the alignment would run along the northern edge of CIRI Tract A, proposed as a site for a cultural resource center, but would not directly use land from Tract A.

In considering potential visual impacts, the Juneau Creek Alternative would introduce a new highway corridor with a visible new bridge in a portion of the project area otherwise devoid of similar features. However, most views of the Juneau Creek Alternative would be obscured by dense forest vegetation from identified historic properties, which are located primarily in or near the exiting highway corridor in the project area. Therefore, no visual effects to historic properties have been identified under the Juneau Creek Alternative.

The Juneau Creek Alternative would provide new access across a long stretch of lands north and west of the Cooper Landing community that to date have been mostly undeveloped. The alternative also would provide a new public trailhead parking area near Juneau Creek. These lands lie within the Sqilantnu Archaeological District. Further consultation and evaluation would occur during the development of an agreement document (see Section 3.9.2.2).

**Section 4(f) Considerations.** The Juneau Creek Alternative, like all the build alternatives, would reconstruct the existing highway near the Broadview Guard Station. There would be no use of the property on which the historic building sits, and no use of the historic structure itself. FHWA has determined through the Section 106 process that there would be no adverse effect to the building and has determined under Section 4(f) that proximity impacts would not be so severe that the activities, features, or attributes of the historic structures would be substantially impaired. Therefore, this property is not addressed in Chapter 4, Section 4(f) Evaluation.

### **Construction Impacts**

Any impacts to archaeological sites and historic properties occurring during construction would be considered direct impacts and are discussed above.

### **Mitigation**

Mitigation to address adverse effects will be developed under the agreement document discussed above in Section 3.9.2.2. As recreation mitigation for effects to the Bean Creek Trail, the trail would be rerouted under the highway and would remain a useable route (see detail in Section 4.6). Historic properties are protected under Section 4(f) of the USDOT Act as well as under Section 106 of the NHPA. DOT&PF and FHWA therefore have considered potential mitigation measures for Section 4(f) purposes, as described in Section 4.6.

### **3.9.2.6 Juneau Creek Variant Alternative**

#### **Direct and Indirect Impacts**

Following are the identified historic properties eligible for listing in the NRHP that would be adversely affected by the proposed Juneau Creek Variant Alternative:

- The **Bean Creek Trail**, where the highway embankment would cross the trail. (See Section 4.2.5 for more details on this historic property and Section 4.5.4 for impacts to the historic property associated with the Juneau Creek Variant Alternative.)
- The **Sqilantnu Archaeological District**, where the highway would affect 22 contributing district prehistoric sites. (See Section 4.2.11 for more details on this historic property and Section 4.5.4 for impacts to the historic property associated with the Juneau Creek Variant Alternative.)
- The **Confluence Traditional Cultural Property**, where the new highway would pass through an important portion of the TCP and would affect several archaeological sites that contribute to the TCP, a subset of the same sites listed above for the larger Sqilantnu District. Also included is CIRI Tract A, proposed as a site for a cultural resource center, which this alternative would bisect. Using a portion of Tract A would reduce the acreage useable for cultural activities or development and would impact CIRI's development plans.

In considering potential visual impacts, the Juneau Creek Variant Alternative would introduce a new highway corridor with visible bridge crossings in the project area that may otherwise be devoid of similar features, similar to the Juneau Creek Alternative. Most views of the Juneau Creek Variant Alternative would be obscured by dense forest vegetation from identified historic properties, primarily located in or near the exiting highway corridor in the project area. However, sites that would be affected under this alternative have been identified for their cultural significance beyond the information potential they may provide. Additionally, the Juneau Creek Variant Alternative could result indirectly in overflow of Sportsman's Landing-Russian River Ferry traffic parking onto the shoulder of the new highway. Although this would be discouraged through "No Parking" signs, it could occur (as it does today on the existing highway, even without substantive shoulders) and could lead to people wandering occasionally into sites important to the Kenaitze Indian Tribe. This alternative also would traverse a long stretch of land that to date is largely undeveloped and would provide a new recreational trailhead near Juneau Creek Falls. These lands lie within the Sqilantnu Archaeological District. Further consultation and evaluation would occur during the development of an agreement document (see Section 3.9.2.2).

**Section 4(f) Considerations.** The Juneau Creek Variant Alternative, like all the build alternatives, would reconstruct the existing highway near the Broadview Guard Station. There would be no use of the land on which the historic property sits, and no use of the historic property itself. FHWA has determined through the Section 106 process that there would be no adverse effect to the building and has determined under Section 4(f) that proximity impacts would not be so severe that the activities, features, or attributes of the historic properties would be substantially impaired. Therefore, this property is not addressed in Chapter 4, Section 4(f) Evaluation.



### **Construction Impacts**

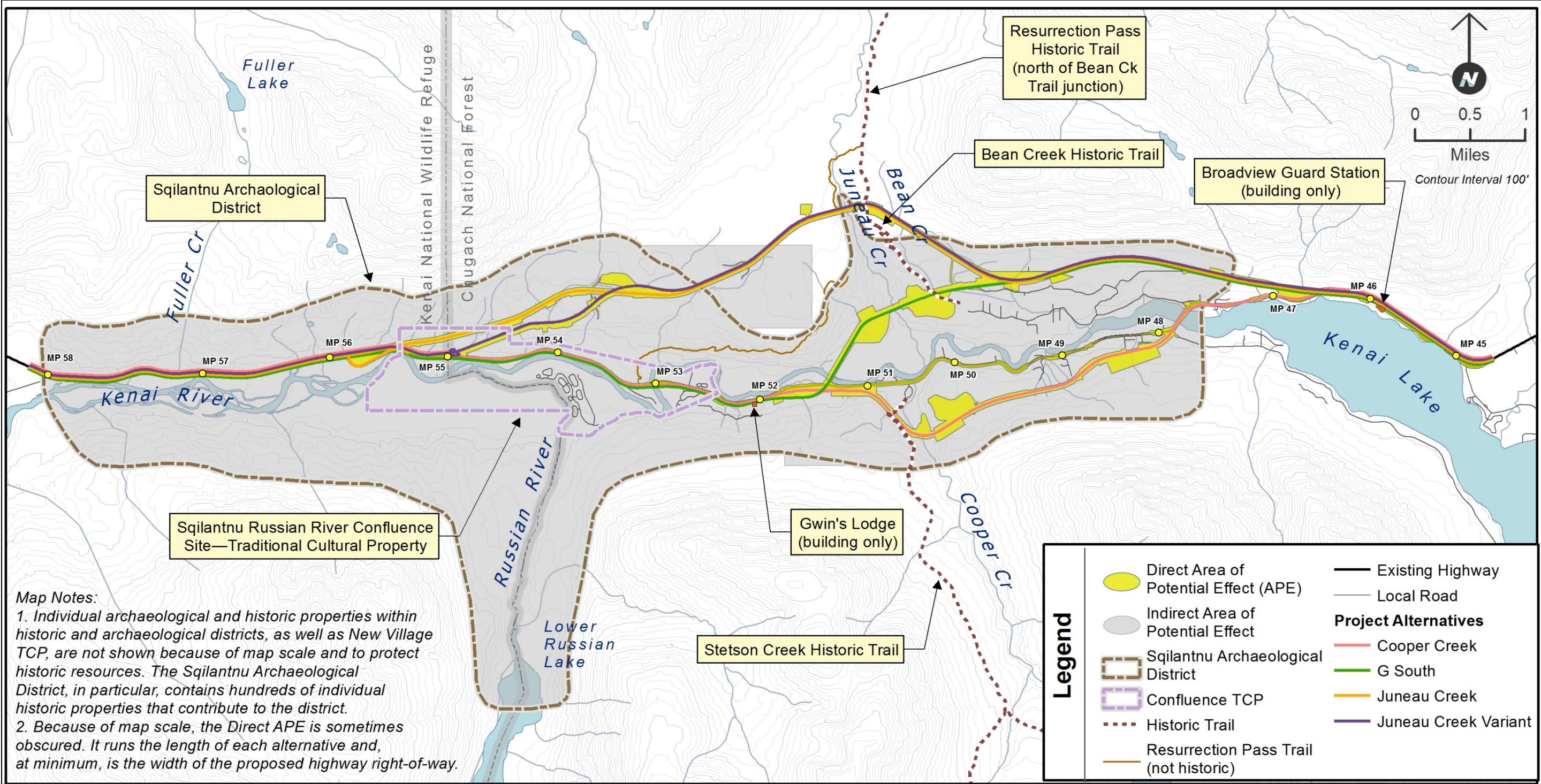
Any impacts to archaeological sites and historic properties occurring during construction would be considered direct impacts and are discussed above.

### **Mitigation**

Mitigation to address adverse effects will be developed under an agreement document discussed above in Section 3.9.2.2. As recreation mitigation for effects to the Bean Creek Trail, the trail would be rerouted under the highway and would remain a useable route (see detail in Section 4.6). Historic properties are protected under Section 4(f) of the USDOT Act as well as under Section 106 of the NHPA. DOT&PF and FHWA therefore have considered potential mitigation measures for Section 4(f) purposes, as described in Section 4.6.

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Map 3.9-1. Historic properties and Areas of Potential Effect in the project area



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### **3.10 Subsistence**

“Subsistence” refers to the harvest of fish, wildlife, or other wild resources to provide for families, communities, and cultures. Subsistence is defined in the Alaska National Interest Lands Conservation Act (ANILCA), Section 803, as “the customary and traditional uses<sup>1</sup> by rural<sup>2</sup> Alaska residents of wild, renewable resources” for non-commercial purposes.

State and Federal regulations differ. State law regulates subsistence on State lands and waters and on private lands, while Federal law regulates subsistence activities on Federal lands and waters.

Under State law, all Alaska residents are eligible to participate in subsistence on State-owned lands, but only in State-defined subsistence use areas. The State Joint Boards of Fish and Game classifies all but the southern tip of the Kenai Peninsula<sup>3</sup> as a “non-subsistence use area” (see Map 3.10-1). Therefore, there are no fisheries or hunts in the project area on State lands or waters that are considered “subsistence.” All Alaska residents are eligible to participate in “personal use” activities in State-defined “non-subsistence areas.” Noncommercial net fisheries (dip net fishing in the lower Kenai River and set net fishing in portions of Cook Inlet) are classified as “personal use fisheries” (ADF&G 2011a).

Federal subsistence law is based on the identification of rural and non-rural<sup>4</sup> areas. Under Federal regulations, communities must be designated as rural to participate in subsistence activities on Federal lands. The Federal Subsistence Board (FSB) must determine that the community has customarily and traditionally harvested the particular resource. FSB subsistence fishing regulations mirror State sport fishing regulations, except the Federal regulations require a subsistence permit and do not require a sport fishing license.

The Sterling Highway passes through portions of the Chugach National Forest (CNF) and portions of the Kenai National Wildlife Refuge (KNWR) between Mileposts (MP) 45 to 60. These Federal lands provide subsistence opportunities to qualified rural Alaska residents under the provisions of ANILCA. A Section 810 subsistence evaluation was prepared to comply with Title VIII, Section 810, of ANILCA, which requires an evaluation of direct and cumulative effects of the project alternatives on subsistence uses of Federal lands. This section summarizes the *ANILCA Section 810 Subsistence Evaluation*, which is provided as Appendix C to this Supplemental Environmental Impact Statement (SEIS).

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<sup>1</sup> As defined in ANILCA, “customary and traditional uses” means the noncommercial, long-term, and consistent taking of, use of, or reliance upon fish and wildlife in a specific area and the patterns and practices of taking or use of that fish and wildlife that have been established over a reasonable period of time, taking into consideration the availability of the fish and wildlife.”

<sup>2</sup> As defined in ANILCA, “rural” residents live in a community or area that is “substantially dependent on fish and wildlife for nutritional and other subsistence uses.” State subsistence regulations do not include this restriction to rural residents.

<sup>3</sup> The areas around Seldovia, Nanwalek, and Port Graham have been classified by the State Joint Boards of Fish and Game as subsistence areas.

<sup>4</sup> Rural (subsistence) areas are those in which dependence on subsistence is a principal characteristic of the economy, culture, and way of life. Non-rural (non-subsistence) areas are located around Fairbanks, Anchorage, the Matanuska-Susitna Borough, the Kenai Peninsula, Juneau, Ketchikan, and Valdez.

### **3.10.1 Affected Environment**

The following summary of subsistence uses includes the three primary rural communities associated with harvests in the project area: Cooper Landing, Hope, and Ninilchik. These rural communities have Federal recognition of customary and traditional or subsistence uses for key subsistence species, such as fish and moose, in Game Management Units (GMUs) 7, 15A, and 15B. GMU 7 encompasses the eastern Kenai Peninsula; GMUs 15A and 15B lie within the eastern portion of the KNWR and abut GMU 7 (see Map 3.10-1).

In accordance with ANILCA 810, subsistence activities such as hunting, fishing, trapping, picking, and gathering are allowed on Federal public lands within the KNWR and CNF. In the Kenai River area, subsistence resources harvested may include bear, moose, fish, small mammals, birds, berries, edible plants, and wood.

The FSB has recognized customary and traditional use of all fish in the rural communities of Cooper Landing, Hope, and Ninilchik for the waters north of and including the Kenai River drainage within the KNWR and CNF. In addition, residents of Ninilchik also have recognized customary and traditional use for all fish in waters of the Kasilof River drainage within the KNWR. Federal subsistence fishing permits are required for those communities for salmon, trout, and Dolly Varden/char in the Kenai and Kasilof river drainages. Seasons, harvest and possession limits, and methods and means of harvest in the Kenai and Kasilof rivers are the same as those in Alaska sport fishing regulations. Regulations provide for three dip net fisheries in the Kenai basin, one on the Russian River, and two downstream of Skilak Lake, and a dip net fishery in the Kasilof River basin.

The FSB has adopted regulations that recognize the customary and traditional use of moose by residents of Cooper Landing. This allows residents of Cooper Landing to harvest moose on Federal lands in GMUs 7, 15A, and 15B under Federal subsistence regulations (see Map 3.10-1). Hope residents have been granted a harvest of moose on Federal lands (CNF and KNWR) in GMU 7, and residents of Ninilchik have been granted a harvest of moose on Federal lands (KNWR) in GMUs 15A and 15B (see Map 3.10-1). Cooper Landing, Hope, and Ninilchik have additionally recognized customary and traditional use determinations that include black and brown bears<sup>5</sup>, caribou<sup>6</sup>, small mammals, and upland birds in these GMUs (see Appendix C for additional information regarding allowable harvests in these GMUs).

Because this is a State non-subsistence area, few harvest studies have been conducted. A study of subsistence harvests for all resources in select upper Kenai Peninsula communities, including Cooper Landing and Hope, was conducted by ADF&G in 1990 (see Table 3.10-1 and Table 3.10-2 and Seitz, Tomrdle and Fall (1992)). A 1998 survey conducted on wild resource uses of selected communities within the Kenai Peninsula Borough included data on wildlife harvests for the community of Ninilchik (see Table 3.10-1 and Table 3.10-2 and Fall, Vanek, et al. (2000)). In 2002, the FSB provided funding to the ADF&G Division of Subsistence to conduct a household survey of Kenai Peninsula communities, documenting subsistence uses of fish. This survey included the communities of Cooper Landing, Hope, and Ninilchik, and identified subsistence fishing patterns consistent with the 1990 study (see Table 3.10-3 and (Fall, Stanek, et al. 2004)). Recently published annual reports for subsistence salmon fisheries include harvest

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<sup>5</sup> The brown bear harvest is limited to Ninilchik in GMUs 15A and 15B.

<sup>6</sup> The caribou harvest is limited to Hope in GMU 7.



information for Cooper Landing, Hope, and Ninilchik for 2009, 2010, and 2011 (Fall, Braem, et al. 2012, Fall, Balivet, et al. 2013a, Fall, Brenner, et al. 2013b). These studies quantified resource harvests taken under both Federal subsistence regulations and State regulations. The patterns of harvest in these communities generally followed seasonal availability and harvest regulations.

**Table 3.10-1. Estimated harvest of fish and wildlife resources**

<b>Resource</b>	<b>Harvested Pounds per Person</b>		
	<b>Cooper Landing, 1990</b>	<b>Hope, 1990</b>	<b>Ninilchik, 1998</b>
All resources	91.5	110.7	163.8
Fish	53.9	65.8	80.8
Salmon	39.5	50.1	42.5
Non-salmon fish	14.5	15.8	38.3
Land mammals	28.8	32.8	66.2
Large land mammals	28.6	31.1	65.7
Small land mammals	0.2	1.7	0.6
Marine mammals	0	0	0
Birds and eggs	2.5	2.4	1.4
Migratory birds	0.5	0.4	0.5
Other birds	2.0	2.0	1.0
Marine invertebrates	2.3	4.0	11
Vegetation	4.1	5.7	4.4

Source: ADF&G (2014b)

**Table 3.10-2. Estimated harvest of select fish and wildlife resources**

<b>Resource</b>	<b>Percent of Households Harvesting</b>		
	<b>Cooper Landing, 1990</b>	<b>Hope, 1990</b>	<b>Ninilchik, 1998</b>
All Resources	94	94	96
Berries	64	75	59
Sockeye Salmon	56	33	45
Coho Salmon	44	33	38
Dolly Varden	44	53	14
Plants/Greens/Mushrooms	35	39	20
Grouse	25	17	29
Halibut	25	25	60
Lake Trout	18	10	2
Chinook Salmon	15	19	47
Moose	10	9	21

Source: ADF&G (2014b)

The 1990 harvest study of all fish and wildlife resources showed that the harvest per person in the Cooper Landing area totaled 91.5 pounds, with an average household harvest total of 238 pounds, and 94 percent of households harvesting resources (ADF&G 2014b). For the community of Hope, the 1990 survey reported 110.7 pounds of resources were harvested per person, the average household harvest totaled 262 pounds, and 94 percent of households harvested wild resources (ADF&G 2014b). The 1998 survey for Ninilchik reported the per person harvest of wild resources totaled 163.8 pounds, and the average household harvest totaled 439.5 pounds, with 96 percent of households harvesting wild resources (Fall, Vanek, et al. 2000). Quantities of specific resources harvested and the percentages of households harvesting a particular resource are detailed in Table 3.10-1 and Table 3.10-2.

The 1990 household survey provides harvest quantities for moose. Historically, moose have been an important resource for Cooper Landing and Hope residents. Between 1975 and 1990, Cooper Landing residents reported an average harvest of 3.3 moose per year for the entire community, and Hope residents reported an average harvest of 5.4 moose per year for the entire community. In 1990, the estimated total community harvest of moose was higher than average, with 10 animals for Cooper Landing and 6 animals for Hope (Seitz, Tomrdle and Fall 1992). In 1998, moose represented the highest percentage of Ninilchik residents' total harvest (95 animals or 0.1 moose per person; see Fall, Vanek et al. (2000)).

The majority of Cooper Landing, Hope and Ninilchik households (59–75 percent) harvested berries. Other commonly harvested resources include other plants, such as greens and mushrooms, and grouse.

Salmon represent one of the most heavily used subsistence resources for the rural communities of Cooper Landing, Hope, and Ninilchik. According to the 1990 study, salmon were the most important wild resource harvested (based on quantities) for Cooper Landing and Hope (see Table 3.10-1 and Table 3.10-2). Because the FSB had not yet granted subsistence rights to these communities, they were taken largely under State sport fishing regulations and not under Federal subsistence regulations (Seitz, Tomrdle and Fall 1992). The 2002 household survey noted that less than 12 percent of all salmon harvested by both Cooper Landing and Hope residents were taken under subsistence regulations (Fall, Stanek, et al. 2004). Similarly, residents of Ninilchik harvested 30 percent of salmon under Federal subsistence regulations, but most fished outside the project area (Fall, Vanek, et al. 2000).

The 2002 ADF&G study surveyed the harvest and use of fish in 103 Cooper Landing households, 60 Hope households, and 100 Ninilchik households. A summary of select fish harvests for these communities is detailed in Table 3.10-3. In Cooper Landing, 90 percent of households used fish, 73 percent harvested fish, and 62 pounds of fish were harvested per person (Fall et al. 2004). In Hope, 83 percent of households used fish, almost 67 percent of households harvested fish, and 62 pounds of fish were harvested per person (Fall, Stanek, et al. 2004). Ninilchik reported 96 percent of households using fish, 73 percent of households harvesting fish, and almost 82 pounds of fish being harvested per person (Fall, Stanek, et al. 2004). The most common fish harvested by these households were sockeye and coho salmon and halibut. These results are comparable to the results of the 1990 and 1998 household surveys, which also showed the relative dependence of these communities on subsistence resources, especially fish.

**Table 3.10-3. Estimated harvest of select fish resources, 2002/2003**

Resource	Cooper Landing		Hope		Ninilchik	
	Pounds per Person	Percent of Households Harvesting	Pounds per Person	Percent of Households Harvesting	Pounds per Person	Percent of Households Harvesting
All Fish	61.7	73%	62.4	67%	81.8	73%
Sockeye Salmon	28.0	62%	14.8	30%	20.7	54%
Coho Salmon	12.2	45%	17.8	45%	11.1	41%
Halibut	10.5	29%	10.5	18%	28.8	53%
Chinook Salmon	4.2	18%	4.2	12%	8.4	38%
Lake Trout	2.2	16%	0.1	3%	0.8	6%
Dolly Varden	1.4	26%	1.6	28%	0.6	12%
Rainbow Trout	1.2	20%	0.9	10%	1.8	6%
Black Rockfish	0.7	3%	0.6	7%	0.8	7%
Eulachon	0.6	2%	1.4	8%	1.3	5%

Source: Fall, Stanek, et al. (2004)

The most recently published annual subsistence salmon fishery harvest information<sup>7</sup> for Cooper Landing, Hope, and Ninilchik reports that in 2011, a total of 131 permits were issued to residents of those communities (69 to Cooper Landing residents, 19 to Hope residents, and 43 to Ninilchik residents). The total harvest in the Kenai and Kasilof rivers Federal fishery was 1,090 salmon (846 to Cooper Landing residents, 159 to Hope residents, and 85 to Ninilchik residents), all of which were sockeye salmon. ADF&G reported that sockeye salmon comprised the majority of the subsistence salmon harvest during the 2007–2010 study years, with 2008 being the highest at 1,716 sockeye salmon harvested by residents of these communities (Fall, Brenner, et al. 2013b).

The majority of the project area is located within GMU 7, and a smaller portion is located in both GMUs 15A and 15B. The locations used to harvest fish were documented in the 1990, 1998, and 2002 ADF&G studies in Cooper Landing, Hope, and Ninilchik (Fall et al. 2004; see Appendix C for further information). Residents of Cooper Landing primarily used the upper Kenai and Russian rivers for sockeye salmon; Kenai Lake and its tributary streams for Dolly Varden and lake trout; and the lower Kenai River for Chinook, sockeye, and coho salmon. Hope residents used Kenai mountain streams in the CNF and the KNWR to harvest salmon and non-salmon fish resources; the lower Kenai River, Kasilof River and Crooked Creek, and Resurrection Bay for salmon; and the northern portion of the Cook Inlet for hooligan. Ninilchik residents used the Russian River to harvest sockeye salmon; the Kenai Lake, Kenai Lake tributary streams, and Kenai mountain streams to harvest trout; and the lower Kenai River, Deep Creek, Ninilchik River and the Cook Inlet for salmon.

<sup>7</sup> These annual reports are limited to salmon fisheries and summarize Federal subsistence and personal use salmon fisheries based on permit data and harvest assessment surveys. The data have limitations (e.g., harvest data are a conservative estimate, and may be an underestimation in some cases, of the number of salmon being taken for subsistence; there is inconsistency in how data are collected, analyzed, and reported). Data reported in the annual reports are limited to numbers of permits and estimated harvests and are not comparable to previously reported data, such as that shown in Table 3.10-3.

General resource use areas for Cooper Landing and Hope were also documented and mapped as a part of the 1990 survey. While the maps are at a large scale and lacking detail, they show that the Sterling Highway MP 45–60 project area and surrounding Federal lands (CNF and the KNWR) are used by residents of Cooper Landing and Hope for harvesting salmon and non-salmon fish, black bear, moose, and furbearers. Cooper Landing residents also reported harvesting vegetation, birds, goats, sheep, and firewood in the approximate project area. The survey does not, however, provide detail on whether the harvests occurred on State or Federal lands or the access locations used by area residents such as trailheads and docks (Seitz, Tomrdle and Fall 1992).

For the community of Ninilchik, the 1998 ADF&G survey provides general locations of wild resource harvests also at the GMU level (Fall, Vanek, et al. 2000). As reported in the study, the project area shows a low level of usage by Ninilchik residents for harvesting wild resources, with GMU 15B showing the highest usage (see Appendix C for additional information).

### **3.10.2    *Environmental Consequences***

The analysis of subsistence impacts is focused on subsistence users from the rural communities of Cooper Landing, Hope, and Ninilchik, as they are the primary harvesters of subsistence resources in the project area. As indicated in the ADF&G data presented in Section 3.10.1 above, key subsistence resources, such as fish and moose, are harvested by these communities in the project area. The following evaluation focuses on potential impacts to harvests of those key resources.

Potential impacts on subsistence within the project area were analyzed using the following three evaluation criteria:

- Potential to reduce subsistence uses caused by changes in resources, resource habitat, or competition for resources;
- Potential to reduce subsistence uses due to changes to resource availability due to alteration in resource migration patterns or distribution; and
- Potential to reduce subsistence uses due to physical or legal barriers to accessing resources.

Based on available subsistence data for the communities of Cooper Landing, Hope, and Ninilchik, the potential impacts to fish and wildlife subsistence resources, resource availability, and resource habitat would be minimal for the reasonable (Build and No Build) alternatives for the Sterling Highway MP 45–60 Project. It is unlikely that a significant reduction of harvestable resources in subsistence use areas would occur due to competition from other subsistence users or recreational hunting and fishing. In addition, it is unlikely that fish and wildlife resource populations and distribution would be substantially affected by increased access to subsistence use areas as a result of any of the alternatives.

The *ANILCA Section 810 Subsistence Evaluation* (see Appendix C) concluded that there was no reasonably foreseeable possibility of a significant restriction of subsistence uses from any of the reasonable alternatives.

The discussion of impacts presented below is modeled on the *ANILCA Section 810 Subsistence Evaluation* (Appendix C).

### **3.10.2.1 No Build Alternative**

#### **Direct and Indirect Impacts**

***Changes in Resources, Resource Habitat, or Competition for Resources.*** Under the No Build Alternative, there would be no new construction, so no new direct adverse effects on traditional harvest areas for fish, wildlife, or wild foods would occur. However, ongoing operations, and maintenance activities, including projected replacement of existing bridges over the Kenai River, could have a minor impact on subsistence resources and habitat. As traffic levels, human population, and recreation increase, resources may increasingly avoid or reduce use of habitats along the highway, habitat quality may decrease, and injury or mortality of resources may occur from increased collisions or hazardous materials spills.

The projected growth in human population and recreation in the project area could increase competition as larger numbers of both subsistence and recreational users compete for the same resources. However, for resources such as fish and moose, subsistence harvests are restricted on Federal lands and waters to residents of local rural communities. Concentrated fishing pressure and associated stream bank erosion could also increase as human population and recreational use of the area increase.

The No Build Alternative retains the existing highway as a narrow road that is at or near its maximum capacity for traffic. Currently, 77 percent of the existing Sterling Highway alignment in the project area is within 500 feet of the Kenai River and its tributaries, presenting a risk that vehicle crashes could spill pollutants with little buffer or opportunity for cleanup before they would reach the river (see Section 3.17 for discussion of hazardous material spill risks). Increased traffic on the existing highway could result in greater runoff of roadway debris and pollutants, which could adversely affect fish habitat immediately adjacent to the highway (see Sections 3.13 and 3.21 for additional discussion of impacts to water quality and fish, respectively).

***Changes in Resource Availability due to Alteration in Resource Migration Patterns or Distribution.*** Under the No Build Alternative, there would be no new construction. Ongoing operations, and maintenance activities, including projected replacement of the existing bridges over the Kenai River could have minor impacts on fish and wildlife migration patterns and distribution (see Sections 3.21 and 3.22 for additional discussion of fish and wildlife distribution and movement). However, these activities would likely have negligible new direct effects on subsistence resource availability from changes in resource migration patterns or distribution.

***Physical or Legal Barriers to Accessing Resources.*** The No Build Alternative would not cause new direct effects to access of subsistence resources due to physical or legal barriers. However, as traffic levels, human population, and recreation increases, increased impacts to resources and habitats, as well as increased competition for resources between subsistence users and sport or personal use harvesters, may result in changes to harvest regulations or closures.

Customary and traditional subsistence uses on Federal lands would continue as authorized by Federal law under the No Build Alternative. However, agencies would continue to monitor resource habitat and populations and to alter hunting and fishing regulations to maintain resources at sustainable levels.

### **3.10.2.2 Issues Applicable to the Build Alternatives**

This section describes subsistence issues common to all of the build alternatives. Although the actual impacts may differ among the build alternatives, this section presents a summary of impacts and presents common background. Impacts specific to individual alternatives are discussed in Sections 3.10.2.3 through 3.10.2.5.

As presented in the *ANILCA 810 Subsistence Evaluation* (Appendix C), there would be no detrimental impacts on communities or people relying on subsistence harvests of fish and wildlife resources as a result of any of the build alternatives.

#### **Direct and Indirect Impacts**

***Changes in Resources, Resource Habitat, or Competition for Resources.*** Similar to the No Build Alternative, the projected growth in traffic levels and recreation in the project area under all build alternatives could create additional pressures on subsistence resources located along the existing highway and increase competition for those resources. If poorly managed, additional and concentrated fishing pressure could reduce habitat and habitat quality, primarily through trampling of river banks and riparian vegetation. A possible increase in competition for subsistence resources could occur because of larger numbers of both subsistence and recreational users vying for the same resources.

All of the build alternatives share general impacts to subsistence resources, habitat, or competition. Impacts to fish and wildlife resources may occur as a result of construction and operation of the build alternatives.

Changes to the landscape can influence wildlife populations through habitat loss, changes in habitat quality, changes in habitat use, or reduced survival (see Section 3.22, Wildlife, for further discussion of these impacts). Impacts to subsistence uses in the project area may include resources avoiding or reducing use of habitat along the highway, actual loss of habitat within the new alignment, decreased habitat quality, fragmentation of habitat, and injury or mortality of resources from collisions or hazardous materials spills.

Some habitat for wildlife would be altered or destroyed by construction of new highway segments. In addition, direct mortality from vehicle collisions could increase where new alignments cross high-quality habitat and from increased traffic volume coupled with higher traffic speeds. However, new and reconstructed highway segments would be wider, with substantially better sight distance throughout their lengths, allowing for increased visibility and maneuvering room for both drivers and wildlife.

The new areas of habitat impact would contribute to fish and wildlife displacement and habitat fragmentation; however, as can be seen in the case of moose, the loss of habitat includes a negligible portion of their total habitat. Table 3.10-4 provides details on potential direct impacts to select fish and wildlife resource habitats for each alternative.

**Table 3.10-4. Potential impacts to select fish and wildlife resource habitat by alternative**

	Build Alternative			
	Cooper Creek	G South	Juneau Creek	Juneau Creek Variant
Miles of new roadway <sup>a</sup>	3.5	5.6	10	9
Miles of roadway on Federal lands	1.4	1.9	4	3.4
USFS	1.4	1.9	3.1	3.4
USFWS	-	-	0.9	-
Number of new culvert crossings or stream re-routing of anadromous fish streams	5	4	1 <sup>b</sup>	1
Number of new or replacement bridges	3 <sup>b</sup>	3 <sup>c</sup>	1 <sup>c</sup>	1 <sup>c</sup>
Acres of wetlands impacted	11	26.6	38.7	37.5
Total moose habitat acres impacted (% of habitat type in project area) <sup>d</sup>	204 (1%)	216 (1%)	277 (2%)	266 (2%)
Total upland game bird habitat acres impacted <sup>e</sup>	83	107	106	109
Total seasonally flooded or permanently flooded wetlands contiguous with essential fish habitat impacted (acres)	2.6	2.6	1.9	1.9
Total essential fish habitat impact (acres) <sup>f</sup>	1.2	1.0	0.8	0.8

<sup>a</sup> “New roadway” is defined as the length of constructed highway that diverges from the existing highway alignment.

<sup>b</sup> The Cooper Creek Bridge crossing is a clear-span design and would not result in any in-stream construction.

<sup>c</sup> The Juneau Creek Bridge crossing is a clear-span design and would not result in any in-stream construction.

<sup>d</sup> See Section 3.22.4 and Table 3.22-11 in the Wildlife section for further information on possible impacts to moose. The impacts to other mammals such as black bear, wolf, and lynx would be similar to those for moose.

<sup>e</sup> See Section 3.22.6 and Table 3.22-13 in the Wildlife section for further information on possible impacts to birds.

<sup>f</sup> See Section 3.21 and Tables 3.21-4, 3.21-5, and 3.21-6 in the Fish and Essential Fish Habitat section for further information.

In addition to improving upon the capacity and safety standards for the Sterling Highway, all build alternatives would decrease the risk of a containment spill into the Kenai River by moving the alignment away from the river (see Section 3.17). Design upgrades, such as widening and straightening the roadway, would also serve to decrease the possibility of collisions of vehicles carrying hazardous substances. According to the ADF&G Division of Subsistence, by routing the Sterling Highway away from the Kenai River, which would reduce the risk of a hazardous substance spill into the river, any of the build alternatives may serve to safeguard aquatic resources and habitat within the project area (Fall, personal communication 2005). Fuel spills may directly affect resource populations and habitat as well as users’ perceptions regarding contamination of the resource, possibly reducing their use of the resource.

Salmon represents one of the most heavily used subsistence resources for the rural communities of Cooper Landing, Hope, and Ninilchik (see Section 3.10.1). Several anadromous fish streams within the project area could potentially be affected during the replacement or construction of bridges and culverts. New culvert and bridge crossings could have temporary and permanent impacts on stream habitat by modifying the hydrologic flow and natural sediment transport in streams at the location of the crossing as well as possibly upstream and downstream of the



crossing. The primary impacts of culverts on aquatic resources would be changes in stream flow that could affect fish passage under the highway, elimination of habitat, and reduction of habitat quality where culverts would replace natural habitat. Where old culverts under the existing highway would be replaced with new culverts built to modern standards, and often at larger diameter, it is possible that fish passage would be established where it had previously been cut off. If designed, constructed, and maintained properly, permanent direct impacts to fish and fish habitat from culvert installation and bridge construction and/or replacement from the build alternatives would be minor. Required culvert design features for all build alternatives, which would preserve fish passage, would result in minimal permanent loss of fish populations or habitat (see Section 3.21.2.2 for more information on impacts to fish and essential fish habitat). Section 3.21.2 includes a detailed analysis of direct and construction impacts to resident and anadromous fish populations and habitat.

Moose inhabit the entire project area, and all of the build alternatives would impact their habitat through alteration and destruction resulting from new highway construction and vegetation clearing. However, the total habitat impacts under the build alternatives would be only 1 to 2 percent of total moose habitat in the project area (see Table 3.10-4). The construction of new roadway has the potential to impact the availability of moose as a subsistence resource due to wildlife displacement and habitat fragmentation. See Section 3.22.4 for further discussion of impacts to moose and moose habitat.

The build alternatives could also impact other wildlife species and their habitat, including Dall sheep, mountain goat, lynx, wolves, and brown and black bears, due to wildlife displacement and habitat degradation and fragmentation as well as mortalities caused by vehicle collisions and human-wildlife conflicts (i.e., defense of life or property for bears). However, these species did not constitute a significant proportion of wildlife resources harvested by Cooper Landing, Hope, and Ninilchik residents. See Section 3.22 for a detailed discussion of project impacts to other wildlife species and their habitats.

Changes to trails and trailheads might shift subsistence uses to new areas. The potential increase in access to new areas could be viewed as beneficial to some, while the increased competition could be viewed as an adverse impact. All build alternatives intersect project area trails and would affect access to CNF lands used for subsistence activities and connectivity of trails in the project area. Depending on the build alternative selected, some trails would be rerouted and additional trailhead areas would be provided (see Section 3.8, Park and Recreation Resources, and 4(f)). Improved access because of the construction of new roads and trailheads, and access to new areas could indirectly affect the intensity of subsistence activities in those areas. Improved access could also impact availability of resources because of increased competition from recreational hunting and fishing. Increased access to previously inaccessible or difficult-to-access areas could also introduce an increase in competition for unregulated subsistence resources such as berries, eggs, or wood.

In general, the build alternatives are unlikely to have a measureable effect on subsistence resources, habitat, or competition. Any impacts would not be significant relative to the overall availability of habitat and subsistence use areas in the project area.

***Changes in Resource Availability due to Resource Migration Pattern or Distribution.*** All of the build alternatives share common impacts to subsistence resources availability due to potential changes in migration patterns or distribution of fish and wildlife resources. While caribou occur

in the Kenai Mountains, no regular migration of caribou herds occurs in the project area. The discussion here is concerned more with general distribution of fish and wildlife and ability to move within an individual's or species' normal range.

Changes to the landscape caused by project construction can influence wildlife population migration patterns and distribution through habitat loss, changes in habitat suitability, changes in habitat use, or reduced survival. In addition, the highway itself can become a barrier to resource migration patterns through design, such as steep embankments or retaining walls, or through resource injuries or mortality due to collisions. The ADF&G Division of Subsistence does not believe any of the project's build alternatives would negatively impact subsistence resource availability (Fall, personal communication 2005).

Wildlife resource availability could be adversely affected due to potential changes to migration patterns resulting from each of the proposed reasonable alternatives. The Cooper Landing area has been identified as a brown bear movement area, with areas just west of Cooper Landing near Juneau Creek identified as primary brown bear habitat. However, the brown bear is not a key subsistence species. Other movement areas have been identified in the project area for moose, as well as other mammals, although impacts to movement of these resources are likely to be minor.

The new highway segments may fragment habitat by impeding access to sections of habitat, which would change migration movements. Physical features of the highway, such as steep embankments and retaining walls, may create barriers to wildlife movement and result in less use of the existing range. Increased noise levels in areas adjacent to new highway alignment segments could also impact normal wildlife distribution through the avoidance or reduced use of existing habitat within the project area. Changes in the use of existing habitat may alter the population distribution and may result in less habitat availability and reduced population size. Impacts to wildlife movement patterns and distribution are discussed in more detail in Section 3.22 (Wildlife). Impacts on wildlife resource distribution or movement from the build alternatives would not likely result in substantial impacts on subsistence uses.

The Alaska Department of Transportation and Public Facilities (DOT&PF) is sponsoring a wildlife movement study that is expected to aid in the design of underpasses and other measures to accommodate movement of brown bears and moose, as well as for other mammals. In addition, DOT&PF has committed to building underpasses on U.S. Forest Service (USFS) roads. While these crossings are not intended specifically for wildlife, DOT&PF is committed to building these structures to wildlife crossing standards so that moose and bears would be able to move under the new highway at these locations.

The build alternatives would not adversely affect the distribution or migration patterns of fish resources, so there would be no impact to subsistence uses. No structures would be placed that would block or impede fish passage.

***Physical or Legal Barriers to Accessing Resources.*** No boat launches would be permanently affected, and access to the Kenai River would remain unchanged from existing conditions, under the build alternatives.

It should be noted that customary and traditional subsistence uses on Federal lands and waters would continue as authorized by Federal law under all build alternatives. However, agencies would continue to monitor resource habitat and populations and alter hunting and fishing regulations to maintain resources at sustainable levels.

Increased access to previously inaccessible or difficult-to-access areas could introduce an increase in competition for unregulated subsistence resources. Unregulated wild resources such as berries, eggs, or wood, for example, could potentially be over-harvested in areas receiving higher levels of usage. Increased harvesting in newly accessible areas could result in land managers needing to introduce regulations to better manage those resources near trailheads or areas used for collecting subsistence resources.

Some access areas (trailheads) to Federal lands would be affected as a result of the build alternatives. Adding new trailheads or improving existing trailheads could improve access to subsistence resource areas, but these new or improved trailheads are not expected to be barriers to resources. In addition, for each of the build alternatives, DOT&PF has committed to building underpasses on USFS roads that would preserve access rights for subsistence users.

The availability of land for subsistence use also could be impacted because target species likely would not spend time near the new highway alignments except to cross them. Also, State law prohibits discharging firearms on, from, or across a road. It is advised that hunters discharge firearms well away from roads as a matter of safety and courtesy (ADF&G 2013d). This law could deter hunting on Federal land with firearms in an approximate one-half-mile-wide swath along each alternative, with the Juneau Creek alternatives creating the most new restriction, followed by the G South Alternative and the Cooper Creek Alternative. While access to CNF lands may be affected due to implementation of a build alternative and these areas of hunting restriction along the new roadway alignments, these changes are not anticipated to have a measurable effect on subsistence use within the project area.

### **Construction Impacts**

Construction activities for each of the build alternatives may temporarily impact subsistence activities by affecting access and reducing habitat availability to subsistence resources, such as fish and wildlife. Construction activities could also result in temporary loss or alteration of habitats; displacement from habitats near staging areas, disposal and borrow sites, and access roads; reduced habitat quantity and quality; and changes in subsistence resource behavior or movement due to noise. Increased noise and activity levels during construction may disturb some subsistence resources, potentially resulting in a temporary displacement of resources from construction nodes in the project area, such as staging areas.

Depending on construction techniques and timing, subsistence populations of salmon could be temporarily impacted. Build alternatives would require construction of a new bridge and/or replacement of existing bridges spanning the Kenai River, Juneau Creek, Bean Creek, or Cooper Creek, all of which are anadromous fish streams. In-water work would be required for the replacement and construction of some bridges. Pile driving, augering, or both would be necessary for placement of bridge pier foundations. Placement of culverts in fish-bearing streams could temporarily affect anadromous fish populations and habitats; however, any new culverts installed in fish bearing waterbodies would be fish passage culverts. Direct disturbance of habitat from in-water work and siltation downstream could temporarily displace fish. Section 3.21 provides a discussion of impacts to resident and anadromous fish populations and habitat.

Access to surrounding Federal lands used for subsistence activities may be temporarily and intermittently disrupted during construction of any of the build alternatives. Construction would likely last three to four construction seasons and would overlap heavily with the primary hunting and gathering seasons (snow-free seasons).

## **Mitigation**

No mitigation measures specific to subsistence are proposed for the build alternatives.

Mitigation identified for trail impacts includes rerouting trail segments and creating new trailheads. If access improves because of the reroutes and new trailheads, more people may use the trails and compete for subsistence resources with current users. This could increase competition for wildlife resources on surrounding Federal lands.

Permit stipulations and recommendations will detail construction techniques and timing of construction activities to minimize impacts to subsistence resources. Current permitting requirements would require build alternatives to be conducted using best management practices that would minimize the amount of time in-water work is conducted, minimize siltation of water bodies during construction, and provide for fish passage during construction and operation (see Section 3.21.2.2 for further discussion of essential fish habitat mitigation for the build alternatives). Mitigation that would address potential impacts to wildlife resources is discussed in Section 3.22.

### **3.10.2.3 Cooper Creek Alternative**

#### **Direct and Indirect Impacts**

***Changes in Resources, Resource Habitat, or Competition for Resources.*** The Cooper Creek Alternative would rebuild approximately 10 miles of the existing highway and construct approximately 4 miles of new alignment skirting Cooper Landing to the south. Where construction is outside the existing highway right-of-way, resource habitat loss will occur.

The Cooper Creek Alternative would result in the loss of approximately 204 acres of moose habitat, or 1 percent of the total moose habitat in the project area (Table 3.10-4). A small portion (2 acres) of this loss is considered high-quality moose habitat. An additional 92 acres of moose habitat could be directly impacted during construction from staging areas and disposal sites; however, these impacts would be temporary and could result in improved moose forage in these areas. Given the negligible impact to moose habitat, the impact to subsistence uses in regard to moose habitat would also be negligible. A detailed discussion of impacts to moose populations and habitat from the Cooper Creek Alternative is included in Section 3.22.4.3 of Wildlife.

The Cooper Creek Alternative would require replacement of two bridges, Cooper Landing Bridge and Schooner Bend Bridge, and construction of a new bridge over Cooper Creek. However, the Cooper Creek Bridge would be a clear-span design and would not involve in-stream construction. For replacement bridges, no permanent impacts would be expected because construction would be in almost the same locations and similar sizes as the existing bridges and highway. Potential impacts to fish habitat would be negligible and temporary and would have a negligible impact on subsistence uses. A detailed discussion of impacts to fish populations and habitat from the Cooper Creek Alternative is included in Section 3.21.2.3 (Fish and Essential Fish Habitat). As impacts to fish habitat and populations from the Cooper Creek Alternative are anticipated to be negligible, the impact on subsistence uses in regard to fish habitat and population would also likely be negligible.

***Changes in Resource Availability due to Resource Migration Pattern or Distribution.*** The impacts to resource availability due to resource migration pattern or distribution under the Cooper Creek Alternative are the same as those discussed above in Section 3.10.2.2.

***Physical or Legal Barriers to Accessing Resources.*** Impacts to subsistence resources and uses due to physical or legal barriers under the Cooper Creek Alternative are the same as those discussed above in Section 3.10.2.2.

### **Construction Impacts**

Construction impacts for all build alternatives, as related to subsistence resources, are addressed in Section 3.10.2.2. These impacts include temporary changes to access, reduced habitat availability, and displacement to resources due to increased noise and activity.

### **Mitigation**

No mitigation measures specific to the Cooper Creek Alternative are proposed. Mitigation measures that would address potential subsistence impacts as they relate to all build alternatives are discussed in Section 3.10.2.2. Permit stipulations and recommendations for fish and wildlife resources will detail construction techniques and timing of construction activities to minimize the impacts (see Sections 3.21 and 3.22, respectively).

#### **3.10.2.4 G South Alternative**

### **Direct and Indirect Impacts**

***Changes in Resources, Resource Habitat, or Competition for Resources.*** The G South Alternative would straighten and widen approximately 8 miles of the existing highway corridor along both ends of the project area, and construct approximately 6 miles for a new alignment skirting north of Cooper Landing and the Kenai River between existing MP 46.3 and MP 51.6. As stated above, where construction is outside the existing highway right-of-way, resource habitat loss would occur.

The alternative crosses currently unaffected wildlife habitat areas, including the lower Juneau Creek delta area. The G South Alternative would result in the loss of approximately 216 acres of moose habitat, or 1 percent of the total moose habitat in the project area (Table 3.10-4). A portion of this loss is considered high-quality moose habitat, including a large logged area east of Juneau Creek and an area near Bean Creek where USFS conducted a hazardous fuels reduction project. Both new and existing highway segments cross areas of predicted use for wildlife such as moose. An additional 114 acres of moose habitat could be directly impacted during construction from staging areas and disposal sites; however, these impacts would be temporary and could result in improved moose forage in these areas. A detailed discussion of impacts to moose populations and habitat from the G South Alternative is included in Section 3.22.4.4 of Wildlife. Given the negligible impact to wildlife habitat, the impact to subsistence uses in regard to wildlife populations and habitat would also be negligible.

The G South Alternative would require replacement of one bridge over the Kenai River and construction of two new bridges, one over lower Juneau Creek and one over the Kenai River. The Juneau Creek Bridge would be a clear-span design and would not involve in-stream construction, so no impacts to fish populations or habitat are anticipated. Construction of a new bridge across the Kenai River would permanently change fish habitat as a result of in-stream construction, altering flows around bridge piers and shadowing from bridge structures. However, this impact is expected to be minimal to resident fish species. The existing Schooner Bend Bridge would be replaced, but no permanent impact to fish populations and habitat would be expected, because the new bridge would be in nearly the same location and would be of similar

size and configuration. Potential impacts to fish habitat during reconstruction of the bridges under the G South Alternative would be negligible and temporary, and would have negligible impact on subsistence uses. A detailed discussion of impacts to fish populations and habitat from the G South Alternative is included in Section 3.21.2.4 of Fish and Essential Fish Habitat. As impacts to fish habitat and populations from the G South Alternative are anticipated to be negligible, the impacts on subsistence uses in regards to fish habitat and population would also be negligible.

A new trailhead would be built where the alignment intersects the Bean Creek Trail. The construction of new trailhead with parking would provide a new access point for the Bean Creek Trail, which potentially could increase the number of trail users and, therefore, increase competition for subsistence resources on adjacent Federal public lands (USFS).

***Changes in Resource Availability due to Resource Migration Pattern or Distribution.*** The impacts to resource availability due to resource migration pattern or distribution under the G South Alternative are the same as those discussed above in Section 3.10.2.2.

***Physical or Legal Barriers to Accessing Resources.*** Impacts to subsistence resources and uses due to physical or legal barriers under the G South Alternative are the same as those discussed above in Section 3.10.2.2.

### **Construction Impacts**

Construction impacts for all build alternatives, as related to subsistence resources, are addressed in Section 3.10.2.2. These impacts include temporary changes to access, reduced habitat availability, and displacement to resources due to increased noise and activity.

### **Mitigation**

No mitigation measures specific to the G South Alternative are proposed. Mitigation measures that would address potential subsistence impacts as they relate to all build alternatives are discussed in Section 3.10.2.2. Permit stipulations and recommendations for fish and wildlife resources will detail construction techniques and timing of construction activities to minimize the impacts (see Sections 3.21.2.2 and 3.22, respectively).

## **3.10.2.5 Juneau Creek and Juneau Creek Variant Alternatives**

### **Direct and Indirect Impacts**

***Changes in Resources, Resource Habitat, or Competition for Resources.*** The Juneau Creek Alternative would straighten and widen approximately 4 miles of the existing highway at both ends of the project area, with approximately 10 miles of new alignment north of the existing roadway between existing MP 46.3 and 55 skirting north of Cooper Landing. The Juneau Creek Variant Alternative would straighten and widen approximately 5 miles of the existing highway at both ends of the project area, with approximately 9 miles of new alignment skirting north of Cooper Landing. An overpass or underpass would be provided to accommodate logging trucks on two USFS roads located west of Juneau Creek; however, no connections between the highway and these roads would be provided.

The Juneau Creek alternatives would not replace any existing bridges, but would construct a new bridge over Juneau Creek. The Juneau Creek Bridge crossing is a clear-span design and would not result in any in-stream construction, so no impacts to fish populations or habitat are



anticipated. As impacts to fish habitat and populations from the Juneau Creek alternatives are anticipated to be negligible, the impacts on subsistence uses in regard to fish habitat and population would also be negligible.

The Juneau Creek and Juneau Creek Variant alternatives would affect approximately 277 and 266 acres of moose habitat, respectively, representing approximately 2 percent of the total moose habitat in the project area (Table 3.10-4). A portion of this loss is considered high-quality moose habitat, including several logged areas east and west of Juneau Creek as well as an area near Bean Creek where USFS conducted a hazardous fuels reduction project. A 106-acre wildlife habitat improvement area is north of the proposed Juneau Creek and Juneau Creek Variant alternatives' alignments and would not be affected by these alternatives. Both new and existing highway segments cross areas of predicted use for wildlife such as moose. Construction activities for the Juneau Creek and Juneau Creek Variant alternatives would result in temporary impacts to approximately 119 and 118 acres, respectively, of moose habitat. A detailed discussion of impacts to moose populations and habitat from the Juneau Creek alternatives is included in Section 3.22.4.5. Given the negligible impact to wildlife habitat under these alternatives, the impact to subsistence uses would also be negligible.

Under the Juneau Creek alternatives, a new separated trailhead would be built where the alignment intersects the Resurrection Pass Trail and a pullout parking area would be built near the Bean Creek Trail. The construction of new trailheads would provide new access points for both the Resurrection Pass Trail and the Bean Creek Trail, which potentially could increase the number of trail users and, therefore, increase competition for subsistence resources on adjacent Federal public lands (USFS).

***Changes in Resource Availability due to Resource Migration Pattern or Distribution.*** The impacts to resource availability due to resource migration pattern or distribution under the Juneau Creek alternatives are the same as those discussed above in Section 3.10.2.2.

***Physical or Legal Barriers to Accessing Resources.*** Impacts to subsistence resources and uses due to physical or legal barriers under the Juneau Creek alternatives are the same as those discussed above in Section 3.10.2.2.

### **Construction Impacts**

Impacts to subsistence from construction activities for the Juneau Creek alternatives are similar to those for the build alternatives as discussed in Section 3.10.2.2. Those impacts would primarily be temporary and would include changes to access, reduced habitat availability, and displacement to resources due to increased noise and activity.

### **Mitigation**

No mitigation measures specific to the Juneau Creek or Juneau Creek Variant alternatives are proposed. Mitigation measures that would address potential subsistence impacts as they relate to all build alternatives are discussed in Section 3.10.2.2. Permit stipulations and recommendations for fish and wildlife resources will detail construction techniques and timing of construction activities to minimize the impacts (see Sections 3.21.2.2 and 3.22, respectively).



Map 3.10-1. Subsistence overview map

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## **3.11 Utilities**

### ***3.11.1 Affected Environment***

Cooper Landing and the surrounding area are rural and do not have a highly developed utility infrastructure.

No natural gas lines are located in Cooper Landing or the surrounding area.

Two-thirds of homes in the Cooper Landing area, as well as the school, use individual water wells and septic tank systems, and are completely plumbed. Residents of the remaining homes haul water or have it delivered and use privies (outhouses). The Kenai Peninsula Borough provides a transfer site for garbage and trash along the Sterling Highway at Milepost (MP) 44.

Chugach Electric Association is the local power service provider in the project area, and Homer Electric Association owns and maintains the power transmission line that traverses through the project area (see Map 3.11-1). TelAlaska maintains the telephone lines within the project area, which are currently strung on the power distribution poles, and both copper and fiber optic communication lines exist within the corridor. During the summer of 2005, TelAlaska replaced the telephone lines (copper and fiber) between the Cooper Landing Bridge and the community of Sunrise and placed these lines underground within the same corridor as the power poles.

### ***3.11.2 Environmental Consequences***

#### **3.11.2.1 No Build Alternative**

##### **Direct and Indirect Impacts**

Under the No Build Alternative, there would be no direct or indirect impacts on utilities located within the project area. There are no plans to relocate, raise, upgrade, or add utilities unless further residential or commercial development occurs.

#### **3.11.2.2 Issues Applicable to the Build Alternatives**

##### **Construction Impacts**

Under the build alternatives, relocation and/or installation of local power distribution, and telephone poles and lines would occur within each proposed alternative's right-of-way. The construction activities for these actions have very small and localized ground disturbance. Overhead power line crossings would require minor relocation and/or raising of power poles. The relocation of underground copper and fiber optic communication lines would require linear trenching along the right-of-ways. Changes or temporary disruptions to utility services such as power and communication lines during construction would be planned to avoid or minimize interruption of service to customers. These disruptions are typically a few hours at a time, not days or weeks.

Specific discussion about the temporary impacts to utilities for each of the build alternatives appears in the sections below. The *Preliminary Engineering Report* (HDR 2014a) provides additional information about utility requirements and specific pole and line needs by alternative.

## **Mitigation**

Notification would be given to users of the services that experience temporary, short-term interruption in service.

### **3.11.2.3 Cooper Creek Alternative**

#### **Direct and Indirect Impacts**

The Cooper Creek Alternative would cross the existing Homer Electric transmission line twice south of MP 49.0 of the existing highway (see Map 3.11-1). These crossings would require the high voltage power lines to be raised and one of the transmission towers to be relocated.

New power poles and service connections would be required to light seven intersections as proposed under the Cooper Creek Alternative (see Section 3.16.2.3). No power lines or other utilities are anticipated to be extended along the Cooper Creek Alternative segment built on new alignment.

#### **Construction Impacts**

Road construction activities would require temporary closures of the Cooper Lake Dam Road. The construction contractor would be required to coordinate temporary closures with the USFS and Chugach Electric Association. Temporary closures would be timed to avoid conflicts with maintenance of the Cooper Lake Hydroelectric Facility.

Transmission line interruptions have the potential to disrupt service on a regional scale. Construction activities to move the transmission tower and raise the power lines would be coordinated with Homer Electric Association to avoid or minimize interruption of service to customers.

From approximately MP 46.0 to MP 46.5 of the existing highway, eight Chugach Electric Association power poles (and associated telephone service line) would need to be relocated. Underground copper and fiber optic communication lines would need to be relocated from approximately MP 46.0 of the existing highway to Snug Harbor Road. At Snug Harbor Road (approximately MP 48.0 of the existing highway), one Chugach Electric Association power pole (and associated telephone service line) would need to be raised. Near MP 51.0 of the existing highway, five Chugach Electric Association power poles and associated telephone service line would need to be relocated. One Chugach Electric Association distribution power pole (and associated telephone service line) realignment would be required at approximately MP 53.5, where the power lines cross the Kenai River. The alternative would be designed to accommodate the line.

## **Mitigation**

Notification would be given to users of the services that experience temporary, short-term interruption in service. Construction activities would be coordinated with Chugach Electric Association and Homer Electric Association to minimize service disruptions.

#### **3.11.2.4 G South Alternative**

##### **Direct and Indirect Impacts**

New power poles and service connections would be required to light six intersections as proposed under the G South Alternative (see Section 3.16.2.4). No power lines or other utilities are anticipated to be extended along the G South Alternative segment built on new alignment.

##### **Construction Impacts**

From approximately MP 46.0 to MP 46.75 of the existing highway, 12 Chugach Electric Association power poles (and associated telephone service lines) would need to be relocated. Underground copper and fiber optic communication lines would need to be relocated from approximately MP 46.0 to MP 47.0 of the existing highway. One Chugach Electric Association distribution power pole (and associated telephone service line) realignment would be required at approximately MP 53.5, where the power lines cross the Kenai River.

##### **Mitigation**

Notification would be given to users of the services that would have temporary, short-term interruption in service.

#### **3.11.2.5 Juneau Creek and Juneau Creek Variant Alternatives**

##### **Direct and Indirect Impacts**

New power poles and service connections would be required to light four intersections as proposed under the Juneau Creek or Juneau Creek Variant alternatives (see Section 3.16.2.5). No power lines or other utilities are anticipated to be extended along the segment built on new alignment for either alternative.

##### **Construction Impacts**

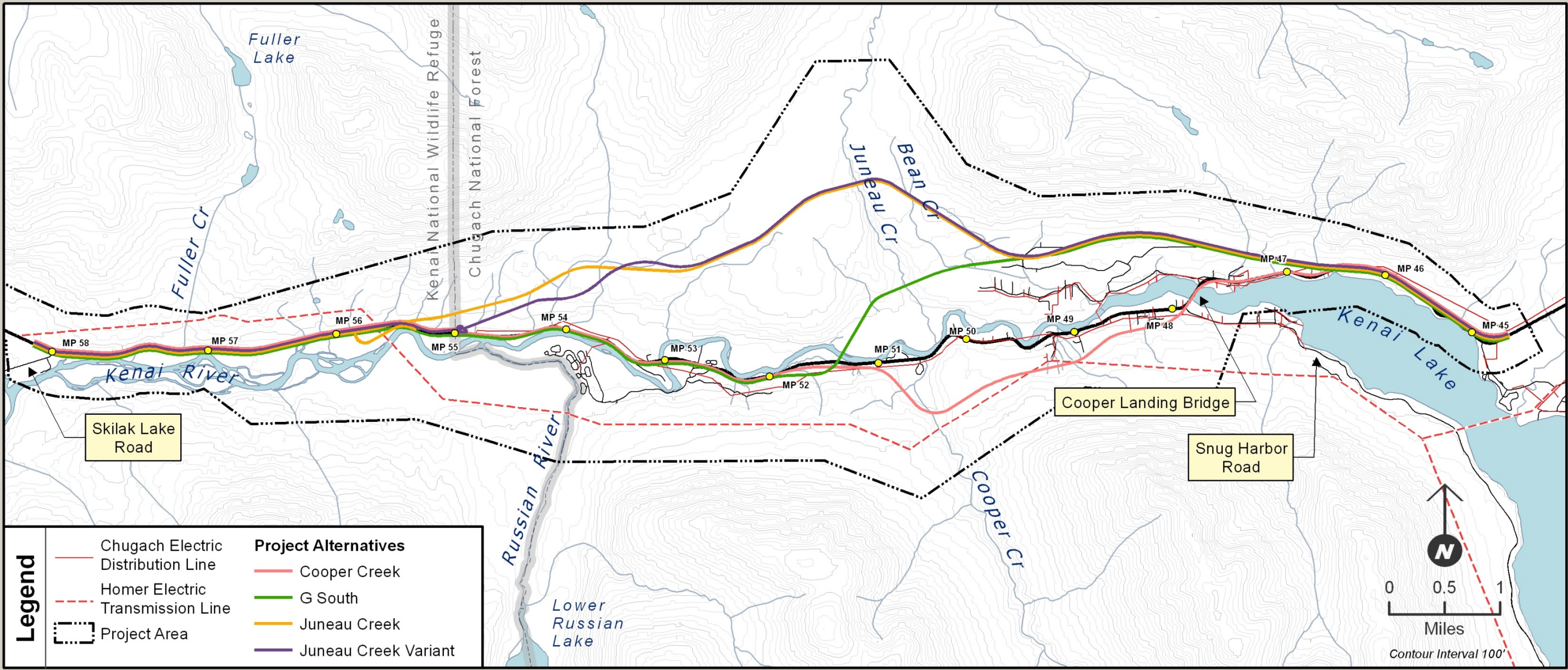
From approximately MP 46.0 to MP 46.75 of the existing highway, 12 Chugach Electric Association power poles (and associated telephone service line) would need to be relocated. Underground copper and fiber optic communication lines would need to be relocated from approximately MP 46.0 to MP 47.0 of the existing highway.

##### **Mitigation**

Notification would be given to users of the services that experience temporary, short-term interruption in service.



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## **3.12 Geology and Topography**

### **3.12.1 Affected Environment**

#### **3.12.1.1 Earthquakes**

The Kenai Peninsula is predisposed to earthquakes in the range of 6.0 to 8.8 on the Richter scale, with a predicted 75-year recurrence interval for magnitude 7.3 earthquakes. There are many small inactive faults in the project area, including the Border Ranges fault west of Cooper Landing.

#### **3.12.1.2 Rock and Soil Stability**

The project area is located in a deep glacial valley that trends east-west through the Kenai Mountains. The existing Sterling Highway is located between mountains ranging from 2,000 to 4,000 feet in elevation, with the valley located at elevations around 400 feet. Tributary valleys enter from the north (Juneau Creek) and south (Russian River and Cooper Creek). The terrain varies from steep and mountainous, to level benches bordered by steep side slopes above the floodplain of the Kenai River, to flat river bottom floodplain areas. Alluvial and till benches, as well as the original glacial valley floor, have been carved deeply by erosion from the Kenai River and its tributaries. Many of the soils are subject to erosion. Along the Kenai River, erosion threatens the existing highway at several locations (e.g., Milepost [MP] 50.3 and MP 55.5), and the Alaska Department of Transportation and Public Facilities (DOT&PF) has armored the road embankment with large boulders (riprap) to help prevent further erosion.

Soils in the project area vary from thin soils on steep topography to deep soils on the alluvial benches that may be either well-drained or overlies deposits of relatively impermeable glacial till (Davis et al. 1980). The well-drained soils of all depths are generally sandy loams. In addition, there are some poorly drained wetland areas with sphagnum peat deposits. Geotechnical studies done for the Sterling Highway in the project area have noted some locations that have fine-grained soils that are subject to failure (landslide) and where large cuts in the soil are not recommended. These are particularly in the area around Cooper Creek and eastward along the Sterling Highway in the MP 49.5 to MP 51 area. The geotechnical studies are summarized in a report (HDR 2014b).

#### **3.12.1.3 Avalanches**

The project area is characterized by steep mountains and heavy snowfall, which can combine to create avalanche hazards. Several avalanche path areas exist within the project area where avalanches commonly occur (Map 3.12-1). Two avalanche paths in the project area impinge directly on the existing highway (Fesler 2001). The first avalanche path is located at MP 46.3, where the Sterling Highway has been blocked with debris twice in the last 30 years and has been hit by powder blast (strong winds preceding the mass of moving snow) twice more. The highway was blocked by avalanche debris in January 1980 and again in February 2000, when an avalanche swept a vehicle off the road. The second avalanche path is at MP 47. Many trees upslope of the highway have been destroyed by avalanches at this location, and the highway itself has been affected at least once in the last 40 years. Most of the avalanches in this path, however, stop above 700 feet elevation.

There are approximately 26 avalanche paths between MP 48 and 51, east of Juneau Creek and upslope of Bean Creek. Of these paths, the six that fall between MP 50 and MP 51 have the greatest potential avalanche frequency. On the south side of the valley, west of Cooper Creek, avalanche paths between MP 51 and MP 53 cross the old power line right-of-way and terminate at the new power line right-of-way lower on the slope. Approximately 12 bowls and gullies found above this section frequently produce sizable avalanches.

### **3.12.2    *Environmental Consequences***

This section describes the potential effects of the project alternatives on geology and topography. It also provides an assessment of avalanche risk. Wind data suggest that effects on the project alternatives from wind would be similar for all build alternatives and would be negligible and have no negative effect. A detailed geotechnical investigation would be required under any build alternative to support the design of engineered slopes, bridge foundations, and other project features.

#### **3.12.2.1        No Build Alternative**

##### **Direct and Indirect Impacts**

##### ***Geology and Topography***

The No Build Alternative would have no effects on the topography of the project area. Earth-moving activities associated with routine erosion maintenance or periodic bridge repair or replacement occurring under the No Build Alternative would have the potential to impact water quality. See Section 3.27, Cumulative Impacts (particularly 3.27.4 and 3.27.7.9), for a discussion of those impacts.

##### ***Effects of Avalanche***

The existing highway passes through avalanche paths at MP 46.3 and 47 (see Map 3.12-1). The path at MP 46.3 can produce infrequent large slides, and the path at MP 47 can produce very infrequent major slides (Fesler 2001). Avalanches would continue posing potential hazards on the existing highway under the No Build Alternative.

#### **3.12.2.2        Issues Applicable to the Build Alternatives**

##### **Construction Impacts**

The build alternatives would alter the topography along the roadway corridor through roadway construction, grading, and extraction of sand and gravel for road foundation materials. Areas within 10 feet of the cut and fill limits would be temporarily disturbed by construction equipment operation (e.g., soil compaction, minor re-grading, and erosion). Construction staging areas adjacent to new bridge locations would be used for material stockpiling and equipment operation. These temporary impacts at staging areas and within 10 feet of the cut and fill limits would be unavoidable. The majority of the roadway construction would occur during non-winter months, so potential avalanche hazards associated with construction workers would be minimized.

Bridge construction would require excavations and/or blasting, which would change the topographic contours and remove rock and soils. Temporary construction roads would need to be



built to provide access to construct the bridges. These temporary construction roads would be restored and re-vegetated following construction.

Earth-moving activities related to highway construction have the potential to impact water quality. To limit soil-related, water quality impacts within the project area, best management practices will be followed (see Section 3.13.2.2 in Water Bodies and Water Quality).

### **3.12.2.3 Cooper Creek Alternative**

#### **Direct and Indirect Impacts**

##### ***Geology and Topography***

The Cooper Creek Alternative would follow benches along the south side of the Kenai River Valley and cross Cooper Creek approximately one-half mile upstream of the existing bridge. Retaining walls would be required both upslope and downslope of the new bridge. A cut approximately 2,500 feet long and up to 120 feet high through the Cooper Creek bluff would be required on the east side of the creek. Geotechnical field reconnaissance completed by DOT&PF (2014) found layers of silt, gravel and sand in all of the test holes. No bedrock or groundwater was encountered.

Mud or soil slides, including clays that turn gel-like and can flow (having thixotropic properties), are known to occur within the Cooper Creek canyon. Although the Cooper Creek Alternative has been designed to minimize cuts in suspected soils of this type, additional investigation to prevent damage to the alternative from potential slides would be required for final design. It is possible that side slopes would have to be constructed at lower angles than normal, employ occasional benches, and/or be armored with local rock in areas where these soils are identified, to keep erosion in check. Disruption of the project area by large cuts and retaining walls would irreversibly alter surficial geology in those areas. The impacts associated with this alternative would primarily be aesthetic (see Section 3.16, Visual Environment). Geotechnical risk would exist, particularly at the Cooper Creek Bridge approach, but standard engineering investigations during the design process would ensure a good understanding of the bridge site geology and allow engineers to design for it. Otherwise, average geotechnical risk would be associated with retaining walls, large earth cuts, and other bridges. Further geotechnical investigation would be required before final slopes or retaining wall types would be selected and designed.

##### ***Effects of Avalanche***

The Cooper Creek Alternative would pass through or near several known avalanche paths. On the eastern end of the project area, north of Kenai Lake, this alternative would cross avalanche paths at MP 46.3 and MP 47 (see Map 3.12-1). On the south side of the Kenai River, between MP 51 and 53, the Cooper Creek Alternative would pass near several avalanche paths. Analysis of potential avalanche hazard was conducted in a study that recommended alignments in this vicinity not extend above the 1,000-foot elevation contour (Fesler 2001). The Cooper Creek Alternative would stay well below this advisory elevation, with a maximum elevation of 733 feet.

#### **Construction Impacts**

Construction impacts of the Cooper Creek Alternative would be similar to those for other build alternatives and are described above in Section 3.12.2.2.

## **Mitigation**

No specific mitigation for impacts to the project area geology is proposed for the Cooper Creek Alternative.

### **3.12.2.4 G South Alternative**

#### **Direct and Indirect Impacts**

##### ***Geology and Topography***

The G South Alternative would depart from the existing highway alignment at MP 46.3 and climb the hillside toward Bean Creek for 1.25 miles to a maximum elevation of 776 feet. The alternative then would descend to cross Juneau Creek (lower canyon area) and the Kenai River, both on new bridges, before rejoining the existing highway corridor at existing MP 51.9. The G South Alternative would require a cut slope approximately 1,000 feet long and up to 220 feet high on the west side of the Juneau Creek crossing, and a cut 2,000 feet long and up to 70 feet high on the east side of the Juneau Creek crossing. The material within the proposed cuts is unknown but is assumed to be primarily material deposited by glaciers and streams, and at this level of design, it is assumed that bedrock will not be encountered.

The impacts associated with this alternative would be aesthetic (see Section 3.16, Visual Environment). Average geotechnical risk would be associated with retaining walls, large earth cuts, and bridges. Further geotechnical investigation would be required before final slopes or retaining wall types would be selected and designed.

##### ***Effects of Avalanche***

The G South Alternative would pass through avalanche paths at MP 46.3 and MP 47 at the east end of the project area (see Map 3.12-1). These paths are common to the existing highway, the No Build Alternative, and all build alternatives. Avalanches would continue posing potential hazards on the G South Alternative at these locations. The G South Alternative would also be subject to a low level of avalanche danger between approximately MP 48 and MP 50 where the alignment would cross below 20 avalanche chutes, but outside the anticipated hazard areas. Culverts or other drainage features may require specific measures to accommodate the interaction between the highway and avalanche or debris flow deposits. The resulting maintenance liabilities at MP 46.3 and 47 would be similar to those for the No Build Alternative. Winter maintenance between MP 48 and 50 could be slightly greater than that for other stretches of road to remove avalanche debris or mitigate the risk.

#### **Construction Impacts**

Construction impacts of the G South Alternative would be similar to those for other build alternatives and are described above in Section 3.12.2.2.

## **Mitigation**

No specific mitigation for impacts to the project area geology is proposed for the G South Alternative.



### **3.12.2.5      Juneau Creek and Juneau Creek Variant Alternatives**

#### **Direct and Indirect Impacts**

##### ***Geology and Topography***

The alignment of the Juneau Creek and Juneau Creek Variant alternatives would depart from the existing highway alignment at MP 46.3 and would be benched into the hillside east of Juneau Creek. The alternatives would cross the Juneau Creek canyon via a new bridge and, immediately west of the bridge, reach a maximum elevation of 1,150 feet before descending the hillside for approximately 4 miles and rejoining the existing highway corridor near MP 55.8. The location of the bridge crossing Juneau Creek canyon was chosen based on results from fieldwork for a rock stability investigation that revealed few areas of relatively stable rock. Substantial rockfalls, landslides, and fractured rock within the canyon walls characterize most of the canyon (R&M 2005). Fractured rock walls drop rock over time to form steep talus slopes. The bases of these slopes are eroded by Juneau Creek. Fractured rock was observed more than 200 feet back from the canyon rims. Geotechnical engineers recommended the bridge site because it demonstrated stable canyon walls compared to areas farther downstream. Further field investigations will determine more precisely how far back the bridge abutments would be located from the canyon rim and where any piers would be located, to ensure placement in competent rock. No construction access road into the canyon would be required.

Retaining walls would be used on these alternatives in the area west of Juneau Creek and between Juneau Creek at the intersection with the existing highway. The impacts associated with this alternative would primarily be aesthetic. Geotechnical risk would exist particularly at the bridge crossing, but standard engineering investigations during the design process would ensure a good understanding of the bridge site geology and allow engineers to design for it. Otherwise, average geotechnical risk would be associated with retaining walls and large earth cuts.

The Juneau Creek and Juneau Creek Variant alternatives would have no indirect impacts to geology and topography.

##### ***Effects of Avalanche***

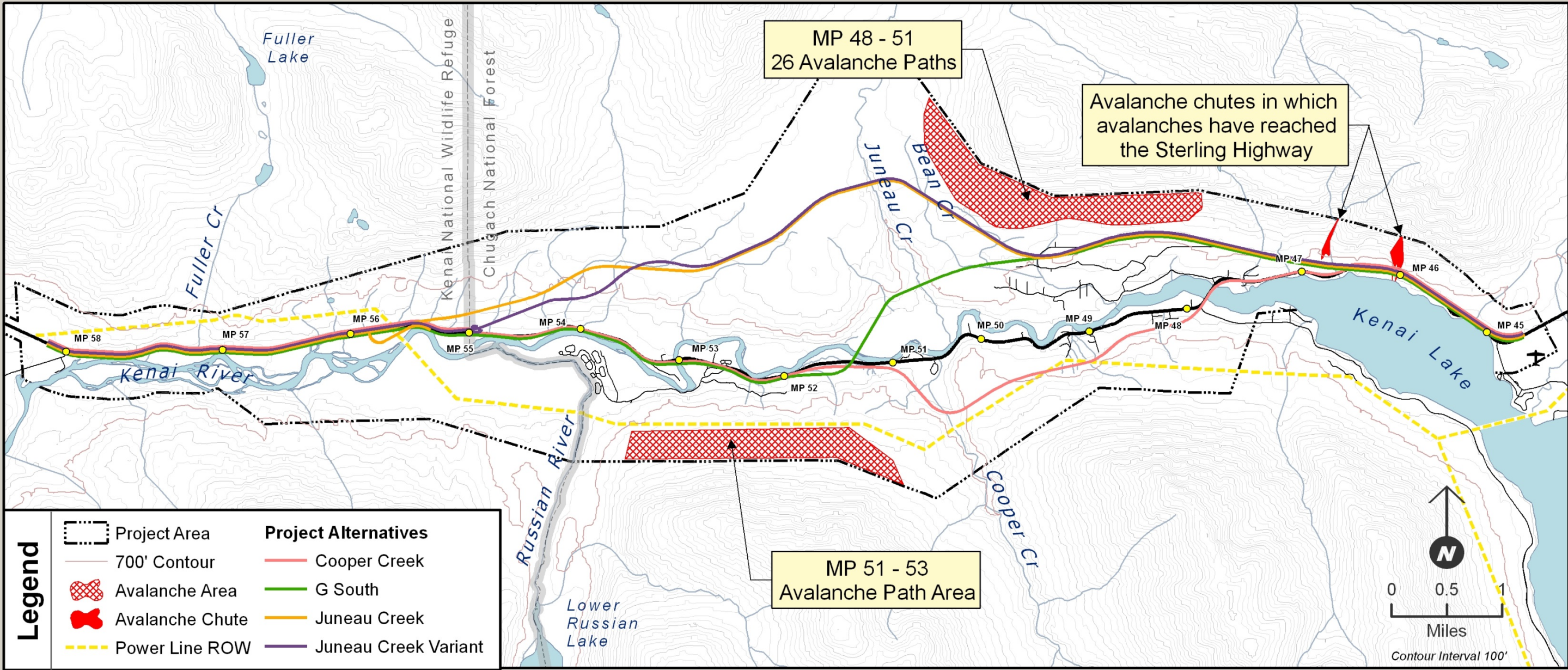
The Juneau Creek and Juneau Creek Variant alternatives would pass through avalanche paths at MP 46.3 and 47 at the east end of the project area (see Map 3.12-1). As with the No Build Alternative, avalanches would continue posing potential hazards on the Juneau Creek and Juneau Creek Variant alternatives at these locations. The Juneau Creek and Juneau Creek Variant alternatives would also be subject to a low level of avalanche danger between approximately MP 48 and 51 where the alignments would cross below 26 avalanche chutes, but outside the anticipated hazard areas. Culverts or other drainage features may require specific measures to accommodate the interaction between the highway and avalanche or debris flow deposits. The resulting maintenance liabilities at MP 46.3 and 47 would be similar to those for the No Build Alternative. Winter maintenance between MP 48 and 51 could be slightly greater than that for other stretches of road to remove avalanche debris or mitigate the risk.

#### **Construction Impacts**

Construction impacts of the Juneau Creek and Juneau Creek Variant alternatives would be similar to those for other build alternatives and are described above in Section 3.12.2.2.

**Mitigation**

No specific mitigation for impacts to the project area geology is proposed for the Juneau Creek and Juneau Creek Variant alternatives.



Map 3.12-1. Avalanche paths in the project area

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### **3.13 Water Bodies and Water Quality**

#### **3.13.1 Affected Environment**

##### **3.13.1.1 Water Bodies**

Water within the project area flows into the Kenai River from many drainage basins and enters through both streams and subsurface flow. The major water bodies within the project area are Kenai Lake and the Kenai River and its tributaries: Fuller Creek, the Russian River, Juneau Creek, Cooper Creek, and Bean Creek (see Map 3.13-1).

**Kenai Lake.** Kenai Lake is a narrow, 22-mile-long, glacially fed lake that serves as the headwaters of the Kenai River. Kenai Lake has a surface area of approximately 13,800 acres, an average depth of approximately 300 feet, and a maximum depth of 541 feet (Spafard and Edmundson 2000). The fjord-like lake was formed by glaciers, which scoured a deep channel before retreating and leaving the lake impounded behind a terminal moraine<sup>1</sup>. Kenai Lake is fed through glacial melt from the surrounding mountain streams. Major tributaries include the Trail River and the Snow River. Smaller tributaries include Quartz Creek, Ship Creek, Primrose Creek, Porcupine Creek, Ptarmigan Creek, and Victor Creek. Kenai Lake acts as a settling pond for some of the glacial sediment transported in from tributary streams, most notably the Snow River (Scott 1982). The shoreline of Kenai Lake is fairly uniform with few inlets or irregularities. Most of the shoreline is undeveloped, with the greatest development occurring near the inlet of the Snow River, near Quartz Creek, and near the lake outlet into the Kenai River (DNR 2008b). Currently, the Sterling Highway alignment parallels the Kenai Lake shoreline from Milepost (MP) 45 to the Cooper Landing Bridge (between Milepost [MP] 47 and 48), where Kenai Lake flows into the Kenai River.

**Kenai River.** The Kenai River travels 82 miles from its origin at the outlet of Kenai Lake to its mouth, where it drains into Cook Inlet. There are many habitat types along the Kenai River, including floodplains, wetlands, and vegetated riparian zones. The Kenai River contains coarse streambed material within a very stable channel. These features are the result of past glacial action. The seasonal and daily fluctuations in stream flow and suspended sediment are also a result of the glaciers within the watershed. Glaciers have influenced the river's development, channel stability, protective cover, water velocities, and bottom material and size, all of which are important to spawning and rearing salmon (Dorava and Scott 1998). Currently, the entire Sterling Highway alignment between MP 47 and 60 is near the Kenai River, often with little or no buffer between traffic and the river environment. The distance from the highway to the Kenai River ranges from being immediately adjacent, to a maximum approximate distance of 1,000 feet occurring in the western part of the project area. About 77 percent of the current alignment centerline is within 500 feet of the Kenai River bank.

**Fuller Creek.** Fuller Creek flows south from mountain lakes to the Kenai River. It is a perennial (year-round) stream in the Kenai National Wildlife Refuge that crosses beneath the Sterling Highway near MP 57. During unusually dry seasons, this stream has been known to go dry. The

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<sup>1</sup> A moraine is any glacially formed accumulation of unconsolidated glacial debris (soil and rock) that occurs in currently glaciated and formerly glaciated regions.

streambed in the project area is 11 to 12 feet wide and is comprised of large gravels and small cobbles. The stream has moderate flow consisting of riffles, small pools, and cascades.

**Russian River.** The Russian River is a major tributary of the Kenai River, flowing north from a glacier-sculpted valley at elevation 700 feet at upper Russian Lake to the confluence of the Kenai River at elevation 350 feet (12 miles in length). Most of the length of the river is floodplain channel type with a shallow slope of less than 1 percent and only very low banks that provide some flood attenuation. The tributaries draining into the Russian River are steep, contained channels.

**Juneau Creek.** Juneau Creek originates north of the project area and flows south through a canyon and waterfall to join the Kenai River just west of the Cooper Landing community between MP 50 and 51. It is the major stream in the project area that drains areas north of the Kenai River. Salmon migrate up the lower river to the 128-foot-high Juneau Creek Falls, located about 3 river miles upstream from the Kenai River. Juneau Creek's lower reaches (below the falls) are within the project area. Within the project area, Juneau Creek habitat is characterized by riffles with small cascades and plunge pools with a bottom of small to large gravels and small cobbles.

**Cooper Creek.** Cooper Creek begins at Cooper Lake and flows 4.7 river miles north to the Kenai River, dropping 750 feet along the way. The upper creek has several falls, which are impassable to salmon. The lower 4-mile stretch of the creek has no substantial fish barriers (Dorava and Ness 1999). The stream is mainly riffle habitat with coarse gravels, cobbles, and boulders. The lower one-half mile is not as steep, flowing through an alluvial fan before its confluence with the Kenai River.

**Bean Creek.** Bean Creek is a relatively small stream that originates at the base of mountain slopes and in wetlands in the project area just east of Juneau Creek. The main stem of Bean Creek has moderate flow with a streambed composed of small to large gravels and small cobbles. The average channel width is 5 feet and the depth ranges from 8 to 10 inches. The channel averages 3 to 4 feet wide. The habitat is mainly riffles and pools.

### **3.13.1.2 Water Quality**

Water quality in the Kenai River drainage in general is monitored by the Alaska Department of Environmental Conservation (ADEC). In 2006, the lower 19 miles of the Kenai River were listed by the State of Alaska as impaired under Section 303(d) of the Clean Water Act; however, the impairment area is entirely outside the project area. The impairment listing resulted from repeated exceeding of State of Alaska Water Quality Standards established for Total Aromatic Hydrocarbons (pollution from fuels), attributed to outboard motor use. The enactment of clean motor regulations in 2008 has resulted in reduced hydrocarbon pollution and attainment of petroleum hydrocarbon standards for all designated uses of the Kenai River, and the river continues to be monitored (ADEC 2010).

### **3.13.1.3 Ambient Conditions, Including Current Roadway Runoff or Other Nonpoint Source Pollution**

Alaska's Nonpoint Source Pollution Control Strategy is used by ADEC to manage pollutants in Alaska that have no specific identified source, such as a pipe or specific building (this type of pollution is known as nonpoint source pollution). The strategy identifies potential sources of

pollution and suggests approaches to manage those sources to prevent pollution of Alaska's waters.

No nonpoint pollution sources have been formally identified in the project area. Roadway runoff does occur when sand, deicing agents in the sand, and potential drips of oils and lubricants are carried with melt water or rain water into adjacent ditches or tributaries and consequently into the river system. The existing highway does not meet current storm water management standard practices for drainage and storm water runoff (HDR 2003a). However, no cases of nonpoint pollution that exceed permissible limits for roadway runoff have been documented within the project area (Stevens, personal communication 2006).

**Critical Aquifer Protection Areas.** The State of Alaska does not have any sole source aquifers; no critical aquifer protection areas are located within the Sterling Highway MP 45–60 Project area.

#### **3.13.1.4 Wells and Wellhead Protection**

In accordance with the Safe Drinking Water Act as amended in 1986 and 1996, ADEC developed a Drinking Water Protection Program that includes wellhead protection area plans (ADEC n.d.). These plans were approved by the U.S. Environmental Protection Agency in April 2000. The program meets all Safe Drinking Water Act requirements through the integration of three components: source water assessments of public water systems, groundwater protection, and wellhead protection.

ADEC implemented assessments of public water systems, as required under a Federal Safe Drinking Water Act program called the Source Water Assessment Program. ADEC completed the community of Cooper Landing's source water assessments in 2002 for public facilities in the area (see Map 3.13-2). Assessments are not required to be conducted for private wells or wells that regularly serve fewer than 25 people and have fewer than 15 service connections.

Protection areas were developed and included in the source water assessment report for each identified public water drinking system as a requirement of the 1996 amendment to the Safe Drinking Water Act. Wellhead Protection Areas are those areas where water carrying potential contaminants could enter the groundwater system and affect a supply well. Protection areas around the drinking water sources are broken into zones for both groundwater and surface water. These zones identify the amount of time it takes a contaminant to get to a well and distance (in some cases), referred to as the time-of-travel. Several factors, including topography, permeability, and proximity to surface water, help define wellhead protection zones.

Two wellhead protection area types, Zones A and B, occur within the project area (Map 3.13-2). Zone A represents areas within a time-of-travel equal to or less than several months, which means that a contaminant release occurring within this zone could reach the public well in as soon as a few months. Zone B represents areas requiring 2 years or less time-of-travel. This means any release occurring within these zones could take as long as 2 years to reach the source and potentially enter the aquifer associated with the well. Restrictions on development within the wellhead protection areas need to be made at the community planning level; however, the Cooper Landing Advisory Planning Commission does not address any restrictions to development within wellhead protection areas (CLAPC 1996).

Private water sources are thought to exist throughout Cooper Landing but have not been documented. Most developed private lots presumably have a well, and some homes and cabins



are said to use surface water sources. The recharge areas of many of the private wells are likely to overlap the wellhead protection areas indicated on Map 3.13-2. The areas around MP 49, both north and south of the Kenai River, are not covered by a wellhead protection area (as indicated by Map 3.13-2), but these areas are also likely to be important recharge areas, given their proximity within the community of Cooper Landing. Section 3.17, Hazardous Waste Sites and Spills, presents related information on water source protection.

### **3.13.2 Environmental Consequences**

This section describes the potential effects of the project alternatives on water bodies and water quality in the project area. Included is a discussion of the locations, types, and extent of water body modifications anticipated with the project alternatives. To the extent practicable, water bodies were avoided during design of the build alternatives; however, each alternative requires construction of bridges and culverts to cross rivers, streams, and other water bodies.

Impacts to water resources from roadway runoff are expected to be negligible in the project area due to the relatively low traffic volumes. Storm water research by the Federal Highway Administration found water quality impacts on receiving waters difficult to measure at locations with annual average daily traffic volumes below 30,000 vehicles per day (Driscoll et al. 1990). The predicted average daily traffic during peak summer months for the project area for the year 2043, ranging from approximately 9,000 to 10,500 vehicles per day, does not exceed 30,000 vehicles per day for all alternatives.

There are no sole-source or principal-source aquifers located within the State of Alaska; therefore, there will be no impact to sole source or principal source aquifers as a result of this project (EPA 2009).

#### **3.13.2.1 No Build Alternative**

##### **Direct and Indirect Impacts**

The No Build Alternative would maintain existing conditions and trends. With continued slow population and traffic growth in the project area, water bodies and water quality could be affected in minor ways. Under the No Build Alternative, the existing highway still would not meet current storm water management standard practices for drainage and storm water runoff, and vehicle pollutants and pollutants draining from the roadway would continue to affect water quality (HDR 2003a). Pollutants might include particulates, petroleum products, metals, solvents, and sodium chloride used as a deicing agent. No case of nonpoint source pollution exceeding limits is anticipated from roadway runoff.

Impacts to the Kenai River due to contamination from oil or other hazardous substance spills from truck/vehicle crashes are a concern of local businesses that depend on the Kenai River for their livelihood. Potential impacts to Kenai River water quality and aquatic life from hazardous material spills are more likely to occur where the roadway is narrow and winding, without shoulders, and close to the Kenai River, as it is under the No Build Alternative. The risk of vehicle crashes that would result in pollutants in the Kenai River or adjoining wetlands and connected waterways is discussed in Hazardous Waste Sites and Spills, Section 3.17.2.

### 3.13.2.2 Issues Applicable to the Build Alternatives

Direct impacts on water bodies and water quality would result from new and replacement bridges and culverts and from new roadway embankment placed in water bodies. Table 3.13-1 presents the number of new and replacement bridges, the number of culvert crossings, and the total number of stream crossings for the four build alternatives. New culvert crossings and bridge crossings would be likely to alter natural flow patterns and habitat in streams at the location of the crossing, and possibly upstream and downstream.

**Table 3.13-1. Summary of direct and indirect impacts on water bodies under build alternatives**

	<b>Cooper Creek</b>	<b>G South</b>	<b>Juneau Creek</b>	<b>Juneau Creek Variant</b>
Number of new bridge crossings (location)	1 (Cooper Creek)	2 (Juneau Creek; Kenai River)	1 (Juneau Creek)	1 (Juneau Creek)
Number of replacement bridge crossings (location)	2 (Kenai River)	1 (Kenai River)	0	0
Approximate number of small stream crossings <sup>a,b</sup>	57	73	63	63
<b>Total water body crossings</b>	<b>60</b>	<b>76</b>	<b>64</b>	<b>64</b>
Number of crossings, anadromous fish streams <sup>c</sup>	8	8	2	2
Percent length within 500 feet of Kenai River and major tributaries <sup>d</sup>	56	45	25	26
Percent length within 300 feet of Kenai River and major tributaries <sup>d</sup>	43	33	15	16

<sup>a</sup> The number of stream crossings does not include the bridge crossings listed above.

<sup>b</sup> Minor crossings of seeps and other small drainages were identified in the field for all other alternatives; however, portions of the Juneau Creek Variant have not yet been field-reviewed. Because the Juneau Creek Variant occupies the same hill slope as the Juneau Creek Alternative, the same number of small crossings is assumed.

<sup>c</sup> Includes crossings that would completely span the stream with bridges more than 100 feet above the water, i.e. Cooper Creek and Juneau Creek.

<sup>d</sup> The proximity of all traffic to the Kenai River would retain the risk that a spill on the highway could pollute the river, because the risk of a spill entering the Kenai river diminishes the farther from the Kenai River the spill occurs. The percentage of the alignment length within a 500-foot buffer zone of the Kenai River and its major tributaries (Kenai Lake, Cooper Creek, Juneau Creek, and Russian River) is one metric to assess the environmental sensitivity of each alternative to water quality risks associated with hazardous materials. A 300-foot buffer setback is advocated by the *Kenai River Comprehensive Management Plan*, and is also presented. For comparison, 77% of the existing highway/No Build Alternative lies within 500 feet of the Kenai River, and 56% lies within 330 feet. See Section 3.17 for additional discussion of spills and risk of pollutants reaching the Kenai River.

All build alternatives would result in an increase in storm water runoff because the project area would have less vegetation and more paved surfaces—a wider highway where rebuilt, and all-new highway in the segments built on a new alignments. For example, each of the alternatives would widen the highway along Kenai Lake where they have a common footprint. Impacts from storm water runoff would not be substantial enough to impact wells and wellhead protection.

All build alternatives would be designed to maintain existing surface water courses and would incorporate grass-lined ditches and swales. However, a new and wider highway would alter local drainage patterns in small ways. Replacement Kenai River bridges proposed for the Cooper Creek and G South alternatives would be expected to have only minor long-term additional impacts to the Kenai River, such as additional shading of river and riparian habitat under the bridge and minor changes to the river flow around bridge piers. Replacement bridges could result in fewer piers in the water, and DOT&PF has committed to bridge designs that include no more piers in the water than exist today.

Widening of the existing highway would require fill along the edge of the Kenai River (a longitudinal encroachment) for all build alternatives, primarily at the western end of the project where all alternatives share the same alignment. There are five longitudinal encroachments needed for the Cooper Creek Alternative, four for the G South Alternative, and one for the Juneau Creek Variant Alternative (see Section 3.19, Floodplains, and Map 3.19-1). Once placed and armored with large rock to minimize erosion, only minor siltation of the river would occur in these areas. Stabilized river banks would be different than natural river banks, which erode or accumulate material and allow the river course to change over time, usually in response to floods. Rock armoring in the river's edge would be designed to be unchanged by flood flows, and the river energy would be transferred in minor ways to other, unprotected parts of the river's banks. Because the areas of fill are principally areas where there already is fill and armoring, these changes are expected to be minor. The amount of fill would be minimized through the use of steeper slopes and retaining walls where feasible.

In addition, the build alternatives vary in risk of vehicle crashes that could result in direct impacts to water bodies and water quality from pollutant discharges. See Section 3.17.2 of Hazardous Material Sites and Spills for methodology determining spill risk and a discussion of impacts to surface and subsurface migration pathways and sensitive resources (including downgradient residences). The amount of road length of the main highway close to the Kenai River varies by alternative. In general, in regard to the varying risk of pollutants entering the river or contaminating drinking water sources, each of the build alternatives would improve the highway to meet current standards, reducing the risk of crashes overall, and more of the resulting highway (including most area traffic) would be located away from the Kenai River. This would result in reduced risk of spills directly into the Kenai River and allow more time for spill cleanup before spills reached the river. Table 3.13-1 and the descriptions below present these variations.

### **Construction Impacts**

Areas actively under construction may have bare soil exposed, which is more prone to erosion. Bridge construction and removal, culvert installation activities, and river-bank stabilization may result in short-term sedimentation and turbidity increases to the Kenai River and other streams in the project area. Impacts to water quality during highway construction could occur from earth-moving activities, temporary increases in nonpoint source pollutant runoff, and debris generation. Sources of nonpoint source pollutants would include dirt, dust, small pieces of rubber and metal, engine oil and fuel, grease, heavy metals, antifreeze drippings, and miscellaneous solid litter and debris from construction equipment. Spills, leaks, and minor loss of construction material into the water are possible, which could temporarily affect water quality. Major spills could impact wells and wellhead protection areas months or years later if not cleaned up quickly; construction contractors operate under requirements to report and clean up spills in a timely manner. Limbs, brush, and other vegetation debris generated from clearing for construction-

related activities are assumed to be disposed of in permitted upland disposal sites on public lands, but could be disposed of on private land with appropriate permit approvals. As such, sediment, ash, and debris will not enter riparian areas.

### **Mitigation**

Water quality impacts will be minimized by the use of best management practices (BMPs) and the implementation of an approved Storm Water Pollution Prevention Plan (SWPPP). No long-term water quality impacts are expected as a result of the construction or removal of temporary bridges and culverts.

To minimize impacts to water bodies and water quality, all construction activities would comply with the Alaska Pollutant Discharge Elimination System Construction General Permit. The DOT&PF would prepare and provide the contractor with a project-specific Erosion and Sediment Control Plan. The contractor would be required to prepare a SWPPP and a Hazardous Material Control Plan (HMCP), which would be submitted to the DOT&PF for approval prior to construction. The SWPPP would identify all receiving waters and specify the structural and procedural BMPs to be used during construction to prevent erosion and untreated runoff from reaching nearby water bodies. BMPs would be developed in accordance with the DOT&PF's *Alaska Storm Water Pollution Prevention Plan Guide* (DOT&PF 2011d) and ADEC's *Alaska Storm Water Guide* (ADEC 2011a). The HMCP would establish procedures for responding to accidental spills. If leaks or spills should occur, contaminated material and soils would be contained and disposed of offsite in an approved DOT&PF/ADEC location. In general, to prevent sediment and chemical water quality impacts during construction, all vehicles, trucks, and heavy equipment would be kept within construction limits and operated in a manner that would limit unnecessary ground disturbance, and all equipment would be routinely inspected and serviced to prevent leaks and accidental spills. In addition, the following BMPs would be undertaken if deemed necessary and appropriate, considering the chosen build alternative.

General construction-related BMPs to be employed:

- Clearing limits would be clearly demarcated prior to construction to ensure impacts would be confined within the project footprint for areas that are near water bodies and wetlands.
- Regular visual inspection of all slopes would be performed to monitor for slope erosion.
- No vehicles or equipment would be fueled or serviced within 100 feet of wetlands or fish-bearing streams, with the exception of “low-mobility” equipment used for pile driving, drilled shaft construction, or other bridge construction. A plan would be provided detailing the process for fueling this equipment within 100 feet of wetlands or fish-bearing streams. Fuel trucks and service vehicles would be equipped with adequate materials (e.g., absorbent pads, booms, etc.) to immediately contain and commence clean-up of spilled fuels and other petroleum products if necessary. Fuel would be stored a minimum of 100 feet from any wetland or water body.

Spill-response equipment would be readily available, and construction personnel would be trained in spill response and would be able to contain accidental leaks of oil or fuel from construction equipment.

To limit sediment disturbance from construction activities:

- BMP erosion and sediment control measures, such as furrow ditches, check dams, and detention basins, would be used.
- Cut and fill slopes would be seeded as soon as possible with fast-growing annual species (to establish root mass) and with native species (for long-term growth and soil stabilization).
- Topsoil would be applied to the surface of road slopes to aid in the reseeding process.

To minimize erosion, temporary water quality impacts from construction activities, and introduction of suspended sediment and siltation:

- Coarse rock rubble would be used to stabilize toes of slopes at stream crossings to prevent the erosion of fine-grained material into adjacent waters and wetlands.
- Roadside swales would be designed to detain surface water to allow sediment-laden water to clear before being discharged.

To mitigate the long-term impact of increased storm water runoff, each alternative would incorporate storm water design treatment features, and BMPs would be designed into the project. All alternatives would be designed to maintain existing surface water courses and would incorporate grass-lined ditches and swales to reduce sediment. Alterations to surface drainage and hydrology that could adversely affect nearby water bodies would be avoided or minimized through incorporation of appropriately designed, sized, and constructed culverts under the roadway to maintain stream flows.

BMPs that would be employed to protect water quality include:

- Designing and constructing the roadway with a low-profile embankment to minimize the fill footprint
- Using rocks to stabilize toes of slopes to limit the erosion of fine-grained material into adjacent waters and wetlands
- Using plant species indigenous to the area for vegetating road slopes wherever possible to protect the integrity of the natural plant communities
- Using non-invasive annual grasses (such as annual rye) to provide rapid, initial soil cover to prevent runoff of fine-grained material into adjacent wetlands
- Designing roadside swales to keep surface water within the natural drainage basins to allow sediment-laden water to clear before its discharge to downstream waters
- Contouring reconstructed stream banks at stream crossings (both culverts and bridge crossings) to approximate original conditions
- Reseeding reconstructed stream banks with native seed and annual rye to minimize erosion, as recommended in the Alaska Department of Natural Resources' *A Revegetation Manual for Alaska*

Impacts to water bodies and water quality would likely result from in-water construction in the Kenai River. During construction, standard best practices and supplementary permit stipulations

would be followed to prevent stream bank erosion, siltation or pollution of water, and disruption of Kenai River recreation. These would include measures such as:

- Keeping tracked or wheeled equipment out of the Kenai River
- Stabilizing exposed earthwork during construction, protecting vegetation to the extent possible, and revegetating exposed or damaged areas following construction
- Ensuring that any imported rock material for placement in and along the Kenai River was clean
- Fueling and serving equipment only at distances of more than 100 feet from wetlands and waters, except for low-mobility equipment such as pile drivers, and specifying detailed fueling procedures and spill contingency plans
- Retaining adequate spill containment and cleanup equipment and supplies on site
- Avoiding use of preservatives or chemicals that could pollute the Kenai River

### **3.13.2.3 Cooper Creek Alternative**

#### **Direct and Indirect Impacts**

The Cooper Creek Alternative would require three major water body crossings, including replacement of two existing bridges over the Kenai River (the Cooper Landing and Schooner Bend bridges) and a large new bridge over Cooper Creek (see Map 2.5-2 in Chapter 2, Alternatives). In addition, several smaller creeks would be crossed with culverts, as shown in Table 3.13-1, above. In-water work would be required for the replacement and construction of bridges over the Kenai River. Pile driving, augering, or both would be necessary for placement of bridge pier foundations. No long-term water quality impacts are expected as a result of bridge construction.

The Cooper Landing Bridge crossing the Kenai River (Map 2.5-2) would require piers to be placed below ordinary high water of the Kenai River. It is located where Kenai Lake flows into the Kenai River. The new bridge piers would be aligned to minimize impacts to water flow. The piers could affect water flow locally, but would not alter general flow patterns of the Kenai River or ice movement. Any portion of the existing bridge not incorporated into the new bridge would be removed after completion of the new bridge, including piers and abutments. If existing piers were not incorporated into the new bridge and could not be removed, they would be cut off below the level of the streambed.

The Schooner Bend Bridge across the Kenai River would be replaced by a bridge located approximately 80 feet downstream from the existing structure (Map 2.5-2). The existing bridge would remain in use during construction and then would be removed after completion of the new crossing. The existing bridge has three piers below ordinary high water in the Kenai River, and the new bridge would have no more piers than the existing bridge below ordinary high water. Piers could affect water flow locally, but would not alter general flow patterns of the Kenai River or ice movement. If fewer piers were placed, there would be less risk of ice floes jamming at the piers and creating floods.

The Cooper Creek Bridge would be located approximately one-half mile upstream of the existing highway bridge over Cooper Creek (Map 2.5-2) and would cross the canyon on tall piers. No

impacts to Cooper Creek would be expected because the bridge would clear span the creek; no piers or fill would be placed below ordinary high water.

The Cooper Creek Alternative includes culvert crossings of approximately 57 smaller streams and drainages (including Fuller Creek), resulting in the replacement of about 47 culverts and the installation of about 10 new culverts. All fish stream culverts would be sized to meet the Alaska Department of Fish and Game-DOT&PF Memorandum of Agreement (ADF&G and DOT&PF 2002) requirements for fish passage. Section 3.21.2.2 of Fish and Essential Fish Habitat discusses effects on resident and anadromous fish streams, and presents fill volumes estimated for culverts in Fuller Creek and three unnamed creeks. Because of better knowledge and design standards, replacement culverts in general are expected to lead to better management of water flows and, where applicable, for better fish passage than existing culverts. Therefore, this would be an improvement to the existing condition. As discussed in Section 3.13.2.2, new culvert crossings would be likely to alter natural flow patterns and habitat in streams at the location of the crossing, and possibly upstream and downstream. However, these impacts would be minimized through proper culvert sizing and placement.

The Cooper Creek Alternative would construct 3.5 new miles of highway built on a new alignment, and most traffic is expected to follow the new alignment. About 59 percent of the highway would be located more than 330 feet from the Kenai River. Improvement of the highway to current standards throughout would reduce the risk of crashes, and the greater separation would reduce the risk that any spilled substance would enter the Kenai River (see Section 3.17, Hazardous Waste Sites and Spills).

An increase in storm water runoff would be a long-term impact resulting from a new and wider highway. Impacts from the runoff would alter local drainage patterns in small ways and are the same as those described above for all build alternatives.

Five locations of longitudinal encroachments of the Kenai River would be required, as discussed in Section 3.13.2.2.

### **Construction Impacts**

Construction impacts to water quality are the same for all build alternatives and are detailed in Section 3.13.2.2.

### **Mitigation**

Water bodies and water quality mitigation and commitments mostly are common to the construction of all alternatives and are described above in Section 3.13.2.2.

The Cooper Creek Alternative's two replacement bridges over the Kenai River would be designed to minimize permanent impact to river hydraulics, fish passage, and navigability. In part, this would be accomplished by minimizing the number of in-water piers. The DOT&PF has committed to minimizing the number of piers, using fewer piers if possible and in both cases constructing the new bridges with no more piers in the river than currently exist. All parts of any replaced bridge, and any temporary construction or detour bridge would be removed from the river if not used in a new bridge at the same site. If existing piers were not incorporated into the new bridge and could not be removed, they would be cut off below the level of the streambed.



#### **3.13.2.4 G South Alternative**

##### **Direct and Indirect Impacts**

The G South Alternative would require three major water crossings, including a new bridge over the Kenai River, a replacement bridge for the Schooner Bend Bridge, and a new crossing over Juneau Creek. In addition, culvert crossings of several smaller creeks would be required. The new bridge over the Kenai River would have two to three piers placed below ordinary high water. The bridge would not be expected to alter general flow patterns of the Kenai River substantially. Impacts on the Kenai River with the replacement of the Schooner Bend Bridge would be the same as those described for the Cooper Creek Alternative. The Juneau Creek crossing would have no piers placed below ordinary high water.

The G South Alternative includes culvert crossings of approximately 73 smaller streams and drainages (including Bean and Fuller creeks), resulting in the replacement of 39 culverts and the installation of 32 new culverts (drainages were combined into one culvert where possible). Section 3.21.2.2 in Fish and Essential Fish Habitat discusses effects on resident and anadromous fish streams and presents estimated fill quantities for culvert crossings of Fuller Creek, Bean Creek, and two unnamed creeks.

Three locations of longitudinal encroachments of the Kenai River would be required, as discussed in Section 3.13.2.2.

The G South Alternative would construct 5.6 miles of highway built on a new alignment, and most traffic is expected to follow the new alignment. About 67 percent of the highway would be located more than 330 feet from the Kenai River. Improvement of the highway to current standards throughout would reduce the risk of crashes, and the greater separation would reduce the risk that any spilled substance would enter the Kenai River (see Section 3.17, Hazardous Waste Sites and Spills).

##### **Construction Impacts**

Construction impacts to water quality are the same for all build alternatives and are detailed in Section 3.13.2.2.

##### **Mitigation**

Water bodies and water quality mitigation and commitments mostly are common to the construction of all alternatives and are described above in Section 3.13.2.2.

The G South Alternative's replacement of Schooner Bend Bridge would be designed to minimize permanent impacts to river hydraulics, fish passage, and navigability. In part, this would be accomplished by minimizing the number of in-water piers. The DOT&PF has committed to minimizing the number of piers, using fewer piers if possible, and constructing the new bridge with no more piers in the river than currently exist. All parts of the replaced bridge, and any temporary construction or detour bridge, would be removed from the river. The new bridge over the Kenai River would be designed to minimize piers in the river and to minimize permanent impacts to river hydraulics, fish passage, and navigability.

### **3.13.2.5 Juneau Creek and Juneau Creek Variant Alternatives**

#### **Direct and Indirect Impacts**

The Juneau Creek and Juneau Creek Variant alternatives would require one major stream crossing over Juneau Creek and culvert crossings of several smaller creeks. The Juneau Creek crossing would be a clear span; no piers or fill would be placed below ordinary high water of Juneau Creek or near the creek. No adverse effects to Juneau Creek are expected. The Juneau Creek and Juneau Creek Variant alternatives include culvert crossings of approximately 63 smaller streams and drainages (including Fuller Creek), resulting in the replacement of 20 culverts and the installation of 41 new culverts (drainages were combined into one culvert in some instances). Section 3.21.2.2 in Fish and Essential Fish Habitat discusses effects on resident and anadromous fish streams.

The Juneau Creek Alternative would require no longitudinal fills on the Kenai River. For the Juneau Creek Variant Alternative, one longitudinal encroachment of the Kenai River would be required, as discussed in Section 3.13.2.2.

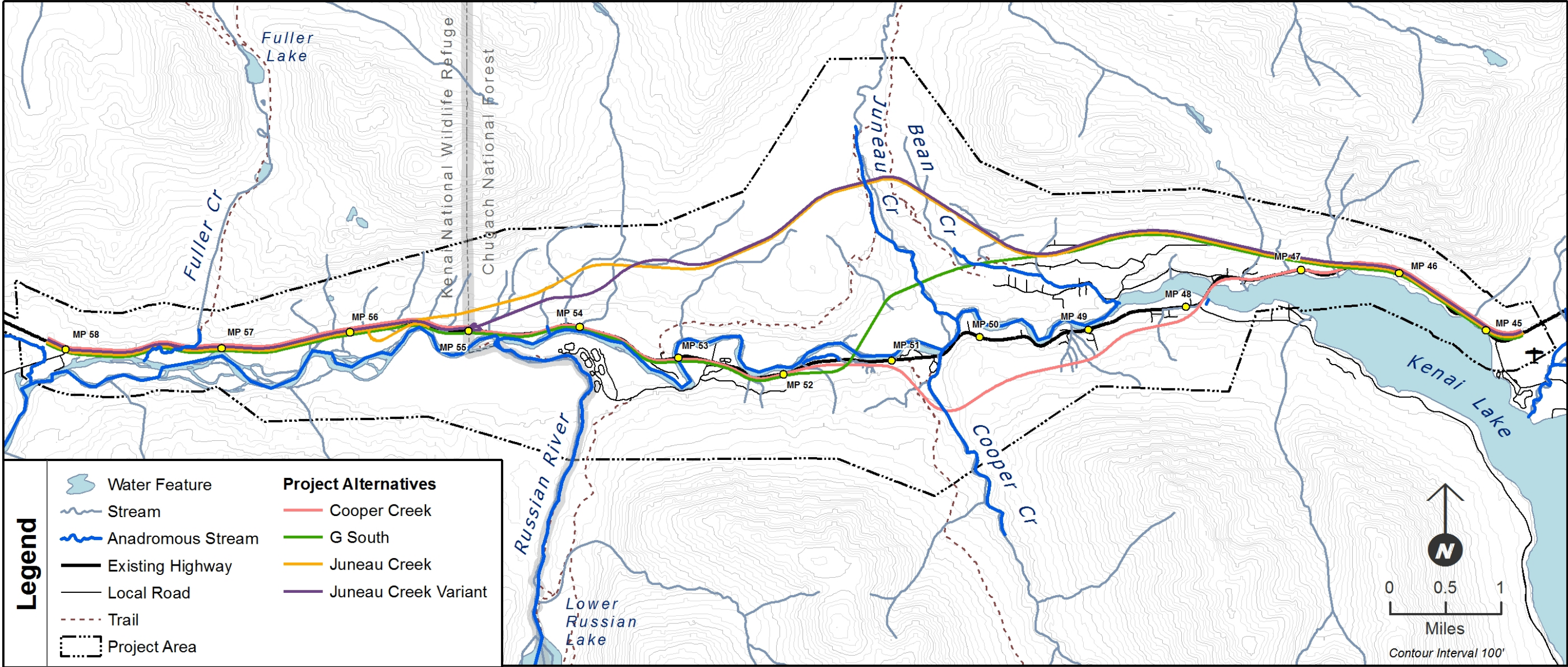
The Juneau Creek Alternative would construct 10 miles of highway built on a new alignment, and the Juneau Creek Variant Alternative would construct 9 miles of highway built on a new alignment. Most traffic is expected to follow the new alignment. About 85 percent of these alternatives would be located more than 330 feet from the Kenai River. Improvement of the highway to current standards throughout would reduce the risk of crashes, and the greater separation would reduce the risk that any spilled substance would enter the Kenai River (see Section 3.17, Hazardous Waste Sites and Spills).

#### **Construction Impacts**

Construction impacts to water bodies and water quality are of the same type for all build alternatives and are detailed in Section 3.13.2.2.

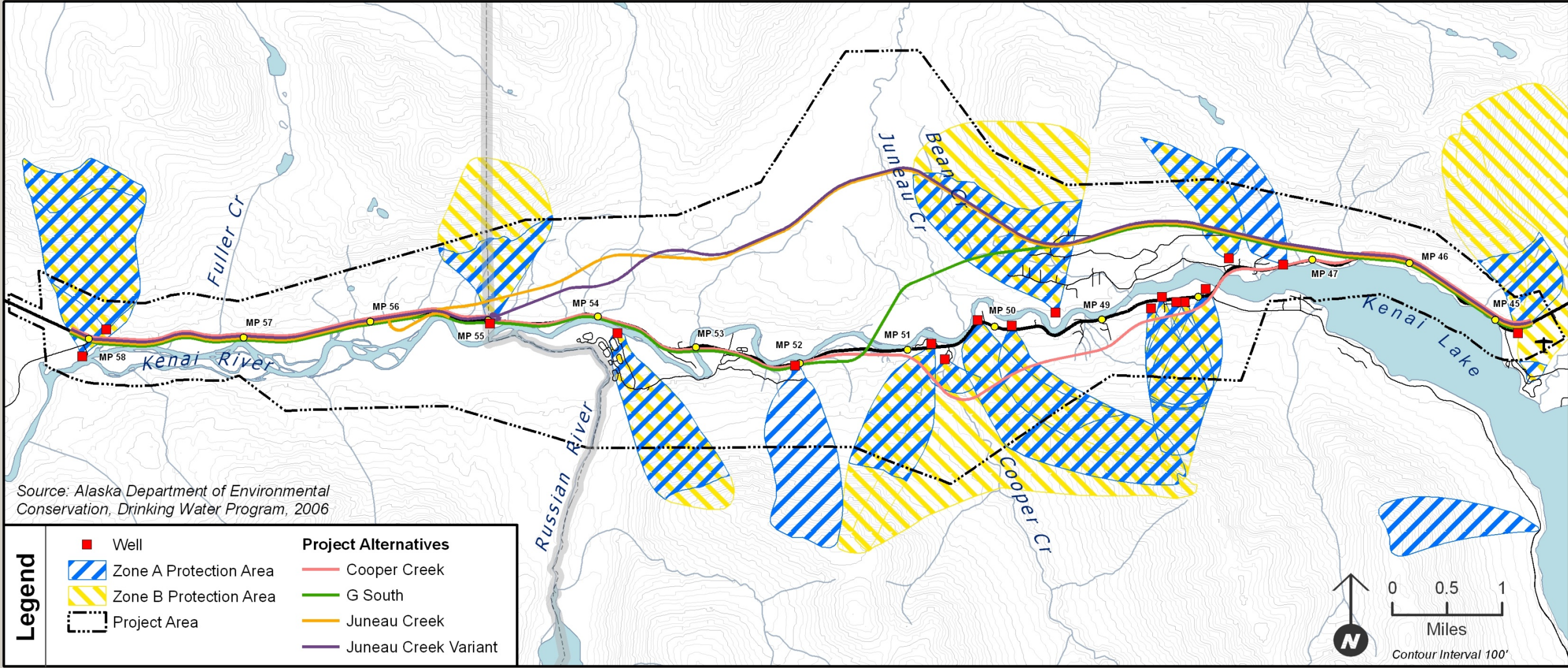
#### **Mitigation**

Water bodies and water quality mitigation and commitments mostly are common to the construction of all alternatives and are described above in Section 3.13.2.2. DOT&PF has committed to building the new bridge over Juneau Creek without access into the base of the canyon, in part to protect Juneau Creek from temporary or permanent fill or channel realignment.



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Map 3.13-2. Wellhead protection zones in the project area

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## **3.14 Air Quality**

### **3.14.1 Affected Environment**

#### **3.14.1.1 Local Air Quality**

All areas in the Kenai Peninsula Borough (Borough), including Cooper Landing, meet the National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO), airborne particulates, airborne lead, sulfur dioxide, ozone, and nitrogen dioxide set by the Environmental Protection Agency (EPA). The project area is not within a Federally designated air quality non-attainment area, maintenance area, or an Alaska Department of Environmental Conservation (ADEC) air quality area of concern for CO or particulate material (PM<sub>10</sub> and PM<sub>2.5</sub>).

The Clean Air Act designates the Kenai National Wildlife Refuge (KNWR) a Class II air quality area. The act requires KNWR to preserve, protect, and enhance air quality on its lands. Wilderness areas that are Class II air-quality areas, such as the Mystery Creek and Andrew Simons Wilderness units in the project area, receive additional protection from the Wilderness Act, which requires the KNWR to minimize the effect of human use or influence on natural ecological processes and to preserve untrammelled natural conditions within designated Wilderness. Class II designated areas allow moderate pollution increases. Projects must be evaluated for exceedances not only of the NAAQS but for Class II “increments.”

Airborne dust from natural and manmade sources is the most common air pollutant on the Kenai Peninsula. Sources of dust include gravel pits, unpaved roads, unvegetated areas, and river floodplains. Other air pollutants include volcanic ash, and smoke from wild forest fires and prescribed burns. During fire season, typically from March to October, the ADEC regularly issues air quality advisories for portions of the Kenai Peninsula when smoke conditions could affect public health. Vehicle emissions and smoke from operating woodstoves usually disperse quickly and typically do not reach hazardous levels within the project area.

Weather data collected from the National Weather Service in the Cooper Landing area indicate the majority of the winds come from the west. Crosswinds through the region are negligible, except at Kenai Lake, where the conjoining valleys from the southeast bring crosswinds from higher elevations and glacier ice fields. The average prevailing winds through the project area are approximately 7 mph (NOAA 2011). As a result, air quality related to dust and particulate material in Cooper Landing and the project area is generally considered good.

Automobiles, including trucks, heavy equipment, and other construction equipment, generate emissions from burning gasoline and diesel fuels, which contain air pollutants such as CO and nitrogen oxides (NO<sub>x</sub>). At high concentrations, these chemicals are known to affect human health and ecosystems.

#### **3.14.1.2 Greenhouse Gas Emissions and Climate Change**

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs). As the amount of GHGs in the atmosphere increases, more heat becomes trapped, contributing to climate change. The principal GHGs that enter the atmosphere because of human activities are carbon dioxide (CO<sub>2</sub>), methane, NO<sub>x</sub>, and fluorinated gases.



An inventory of Alaska's GHG emissions found that about 35 percent of all emissions were from the transportation sector (ADEC 2008). Other statewide contributors include industrial activities and the fossil fuel industry (50 percent), residential and commercial fuel use (8 percent), electricity (6 percent), and waste and agriculture (1 percent). There is no inventory of local GHG emissions for the Borough. Given the lack of industrial activity in the project area, it is likely that transportation and residential and commercial fuel use are the major contributors in the project area.

Climate change is an issue of national and global concern. While the earth has gone through many natural climatic changes in its history, there is general agreement that the earth's climate is currently changing at an accelerated rate and will continue to do so for the foreseeable future. Anthropogenic (human-caused) GHG emissions contribute to this rapid change.

Many GHGs occur naturally. Water vapor is the most abundant GHG and makes up approximately two-thirds of the natural greenhouse effect. However, the burning of fossil fuels and other human activities are adding to the concentration of GHGs in the atmosphere. Because the atmospheric concentration of GHGs continues to climb, our planet will continue to experience climate change-related phenomena, such as changes in precipitation and sea levels.

To date, no national standards have been established regarding GHGs, nor has the EPA established criteria or thresholds for ambient GHG emissions pursuant to its authority to establish motor vehicle emission standards for CO<sub>2</sub> under the Clean Air Act. However, there is a considerable body of scientific literature addressing the sources of GHG emissions and their adverse effects on climate, including reports from the Intergovernmental Panel on Climate Change, the U.S. National Academy of Sciences, and the EPA and other Federal agencies.

GHGs are different from other air pollutants evaluated in Federal environmental reviews because their impacts are not localized or regional due to their rapid dispersion into the global atmosphere, which is characteristic of these gases. The affected environment for CO<sub>2</sub> and other GHG emissions is the entire planet.

### **3.14.2 Environmental Consequences**

This section describes the effects of the project alternatives on local air quality, specifically related to changes in vehicle emissions and construction activities. As determined by ADEC Division of Air Quality and in accordance with the criteria given in Federal Transportation Conformity regulations, under 40 CFR § 93, Subpart A, this project is in an area where the State Implementation Plan for air quality does not contain any transportation control measures. Therefore the conformity procedures in 40 CFR § 93 do not apply.

From a quantitative perspective, global climate change is the cumulative result of numerous and varied GHG emissions sources (in terms of both absolute numbers and types), each of which makes a relatively small addition to global atmospheric GHG concentrations. In contrast to broad-scale actions, such as actions involving an entire industry sector or very large geographic areas, it is difficult to isolate and understand the GHG emissions impacts for a particular transportation project. Furthermore, presently there is no scientific methodology for attributing specific climatological changes to a particular transportation project's emissions. For this Supplemental Environmental Impact Statement, GHGs and climate change are addressed as a cumulative impact in Section 3.27.16.

### **3.14.2.1 No Build Alternative**

#### **Direct and Indirect Impacts**

The project area is not located in a non-attainment area and has no record of violating National Ambient Air Quality Standards (ADEC 2009). Considering the historically good air quality in the project area, the No Build Alternative is not expected to exceed air quality standards in the project area or to have any adverse regional effects compared to existing conditions.

Vehicle emissions generally are proportional to the number of vehicle miles traveled. The number of trips on the highway and within the project area is anticipated to increase by the same amount under the No Build Alternative or build alternatives within the life of the project (by 2043). Emissions in the project area associated with vehicle miles traveled would be expected to increase but would be offset in part by higher efficiencies in the vehicle fleet nationwide, in response to stricter fuel efficiency and emissions standards.

EPA is requiring refiners to reduce diesel fuel sulfur for over-the-road trucks, and is continuing to propose and finalize rules to reduce emissions of criteria pollutants and air toxics pollutants from both diesel and gasoline engines. These new rules would both reduce hazardous air pollutant emissions from vehicles in the project area and from other mobile sources in the Borough. The new emissions standards are expected to contribute to a continuation of the long-term downward trend in emissions from individual vehicles.

Congestion in the project area would be expected to increase over time under the No Build Alternative. By 2043, much or all of the existing highway is projected to be on the verge of stop-and-go congestion during busy summer weekends. Engine efficiency typically is lower and emissions overall higher under congested conditions. While emissions would be unlikely to exceed standards under the No Build Alternative, they would likely be worse than current conditions. Air quality degradation can affect visibility, plants, animals, soil, water quality, and cultural resources. Traffic congestion likely would be worst in the community of Cooper Landing, and emissions from idling slow-moving vehicles at busy times could create noticeably poorer air quality for roadside businesses, homes, walkways, and public facilities such as the Cooper Landing Boat Launch Ramp. Near designated Wilderness, access to the Sportsman's Landing experiences congestion that likely affects air quality during periods of high use. Under the No Build alternative, that congestion would continue and likely would exacerbate concentrations of air pollutants as traffic grew.

The No Build Alternative is not anticipated to exceed the NAAQS. It is anticipated that improvement in per vehicle emissions would offset the traffic increase so that the incremental changes to pollutants are anticipated to be negligible. .

### **3.14.2.2 Issues Applicable to the Build Alternatives**

Any impact to air quality would be low and of the same type for each of the build alternatives. For this reason, discussion of each alternative is not broken out separately. There is one difference to keep in mind throughout the following paragraphs: The Cooper Creek Alternative would run through a substantial portion of the Cooper Landing community, and therefore temporary traffic-related exhaust smells, dust, and emissions may be experienced by community residents, visitors, and businesses under this alternative. The same is true for temporary construction impacts to air quality. The other build alternatives would be routed around the community in its entirety, and permanent air quality impacts associated with highway traffic,

although currently minor, would decrease further in the community compared to current conditions.

### **Direct and Indirect Impacts**

Considering the historically good air quality in the project area, none of the build alternatives is expected to exceed air quality standards in the project area or to have any adverse regional effects.

Vehicle emissions are generally anticipated to be proportional to the number of vehicle miles traveled. The number of trips on the highway and within the project area is anticipated to increase the same under all alternatives, including the No Build Alternative, within the life of the project (by 2043). Future traffic would not reach levels that would approach or exceed any of the NAAQS. The small differences between the lengths of any of the build alternatives would not create an appreciable difference in air quality impacts among the alternatives.

Within the KNWR (and adjacent to designated Wilderness), the build alternatives are anticipated to have the same air quality effects because they have the same passing lanes, shoulders, turn pockets, etc., and have the same traffic. Only the Juneau Creek Alternative would use property from the designated Wilderness area, and therefore would shift mobile sources of air pollution (vehicles) into areas currently designated as Wilderness. It is anticipated that the improvements to per vehicle emissions over time would make any incremental deterioration of air quality to this Class II area negligible. The increase in emissions associated with vehicle miles traveled would be partially offset by increased engine efficiency and associated reductions in emissions, as explained above under the No Build Alternative.

Impacts likely would be offset further by improving the traffic flow along the highway corridor, thereby reducing congestion and allowing vehicles to operate at constant travel speeds. Vehicles traveling at constant, higher speeds are typically more fuel efficient than those operating within stop-and-go traffic congestion. All build alternatives would reduce traffic congestion. For these reasons, none of the build alternatives is anticipated to adversely affect project area air quality. No indirect impacts to air quality are anticipated, because the build alternatives would not induce growth or provide new access. As such, any of the proposed alternatives, through their compliance with State standards for visible and particulate air quality, would be consistent with the air quality standards set forth in the 2002 *Chugach National Forest Revised Land and Resource Management Plan* (USFS 2002a) and KNWR Comprehensive Conservation Plan (USFWS 2010a).

### **Construction Impacts**

Construction activities associated with the build alternatives would result in temporary impacts to air quality from increased dust and from particulate matter contained in vehicle and equipment emissions. Dust from dirt, rock, and other fine materials can become airborne when being transported in uncovered trucks and when vehicles cross dry, unpaved dirt surfaces. Ambient CO and NO<sub>x</sub> levels are expected to increase during construction, due to concentrated activity by large construction equipment, but are not expected to exceed air quality standards. Most of the construction activity and associated emissions would take place during the warmer parts of the year, when atmospheric dispersion tends to be greater than in the colder winter months. Also, the construction-related exhaust emissions would take place across the construction area, rather than being concentrated at a single location.

These effects would be similar for all alternatives. The Cooper Creek Alternative includes a segment of construction within the developed community of Cooper Landing, so there is greater potential for temporary dust and emission effects to people in the community under that alternative.

### **Mitigation**

None of the build alternatives would cause air quality to approach or exceed NAAQS. While no mitigation is necessary to abate long-term impacts to air quality, several mitigation measures would be used to minimize adverse air quality impacts during construction, as required by the Alaska Pollutant Discharge Elimination System Construction General Permit. Airborne dust would be minimized by applying water during construction, sweeping periodically, disposing of solid waste properly, and stabilizing all disturbed soils as soon as possible. The specific best management practices (BMPs) proposed and their frequency of use would be determined by the contractor and outlined in the project Storm Water Pollution Prevention Plan (SWPPP). Additional BMPs typically identified in the SWPPP that may minimize air quality impacts during construction include maintaining routine maintenance and servicing schedules on construction equipment, and identifying contractor operating procedures to avoid unnecessary idling by vehicles, trucks, and heavy equipment.

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## 3.15 Noise

### 3.15.1 Affected Environment

Sound is made up of tiny fluctuations in air pressure. Sound within the range of human hearing can vary in intensity by more than 1 million units; therefore, a logarithmic scale, known as the decibel scale (dB), is used to quantify sound intensity and compress the scale to a more manageable range.

Sound is characterized by both its amplitude (how loud it is) and frequency (or pitch) measured in Hertz (Hz). The human ear does not hear all frequencies equally. In evaluating highway traffic noise, an A-weighted decibel scale (dBA) is used to reflect the selective sensitivity of human hearing. This scale puts more weight on the range of frequencies where human hearing is most sensitive, and less weight on those frequencies humans do not hear as well. FHWA uses the A-weighted decibel scale. A U.S. Fish and Wildlife Service (USFWS) study mentioned below (Section 3.15.1.4) uses unweighted decibels, which may be more suited to effects on wildlife (see also Section 3.22).

When noise levels change 3-dBA or less, the change is considered to be barely perceptible to an adult with normal hearing in an outdoor setting. A 5-dBA change in noise level is clearly noticeable. A 10-dBA change in noise levels is perceived as a doubling or halving of noise loudness, and a 20-dBA change is considered a dramatic change in loudness. Table 3.15-1 shows noise levels associated with common, everyday sources, and helps describe the magnitude of noise levels discussed in this section.

**Table 3.15-1. Common noise sources and levels**

Sound Pressure Level (dBA)	Typical Source
120	Jet aircraft takeoff at 100 feet
110	Same aircraft at 400 feet
90	Motorcycle at 25 feet
80	Garbage disposal
70	City street corner
60	Conversational speech
50	Typical office
40	Living room (without TV)
30	Quiet bedroom at night

Source: Rau and Wooten (1980).

Note: dBA = A-weighted decibels

#### 3.15.1.1 Noise Regulations and Analysis Methods

Highway traffic noise was evaluated in compliance with the Federal Highway Administration (FHWA) *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (23 CFR 772) and the Alaska Department of Transportation and Public Facilities (DOT&PF) *Noise Policy*



(DOT&PF 2011c), which describes the implementation of the FHWA noise regulations in Alaska.

*Procedures for Abatement of Highway Traffic Noise and Construction Noise* sets forth a system of assigning land uses in the vicinity of each alternative to an activity category based on the type of activities occurring in each respective land use (e.g., residences, recreational areas, churches, commercial land, and undeveloped land). Activity categories are then ordered based on their sensitivity to traffic noise levels. Noise Abatement Criteria, representing the maximum traffic noise levels that allow uninterrupted use, are assigned to each activity category. Table 3.15-2 lists the seven FHWA land use categories included in the Noise Abatement Criteria, and the hourly equivalent noise level (Leq[h]<sup>1</sup>) associated with each activity category.

**Table 3.15-2. FHWA Noise Abatement Criteria**

<b>Activity Category</b>	<b>Leq (h)</b>	<b>Description of Activity Category</b>
A	57 dBA (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B <sup>a</sup>	67 dBA (Exterior)	Residential
C	67 dBA (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52 dBA (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E	72 dBA (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A–D or F
F	None	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	None	Undeveloped lands that are not permitted

<sup>a</sup> Includes undeveloped lands permitted for this activity category.

Source: 23 CFR 772, Table 1

Note: Leq(h) = hourly noise equivalent level; dBA = A-weighted decibels

<sup>1</sup> Highway traffic noise levels vary over time because traffic volumes and the type and speed of vehicles that create the noise vary. Because of these time-related variations, it is useful to convert the varying noise levels into a single representative noise level. FHWA uses the Equivalent Sound Level or Leq to characterize the fluctuating noise levels. The Leq is defined as the equivalent steady-state sound level which, in a stated period of time, contains the same acoustic energy as the time-varying sound level during the same period. For FHWA traffic noise studies, Leq is evaluated over a one-hour time period and is denoted as Leq(h). Unless otherwise indicated, all noise levels discussed in this Supplemental Environmental Impact Statement (SEIS) are Leq(h) noise levels. Note that instantaneous sounds, such as when a truck passes and is then gone, may be much louder. Source: West Virginia Department of Transportation, <http://www.wvcorridorh.com/engineer/definitions.html>.

The FHWA definition of a traffic noise impact (23 CFR 772) contains two criteria. Only one criterion has to be met for an impact to occur. Traffic noise impacts are defined as impacts that occur when the predicted traffic noise levels:

- Approach or exceed the noise abatement criteria given on Table 3.15-2; or
- “Substantially exceed” the existing noise levels.

The DOT&PF *Noise Policy* defines noise levels that “approach” the Noise Abatement Criteria as those within 1 dBA of the Noise Abatement Criteria (DOT&PF 2011c). Consequently a traffic noise impact would occur when noise levels at Activity Category A land uses are greater than or equal to 56 dBA, Activity Category B and C land uses are greater than or equal to 66 dBA, etc. The DOT&PF guidance defines noise levels that “substantially exceed” existing levels as a 15-dBA increase over existing noise levels (DOT&PF 2011c).

### **3.15.1.2 Sensitive Noise Receptors**

Land uses throughout the project area include Activity Category B (residential) and Activity Category E (commercial) land uses along the existing highway alignment, with Activity Category C (campgrounds, trails, and recreational areas) land uses farther from the existing highway alignment. Category G, designating “undeveloped” land uses, refers mostly to private developable lands that are vacant. While much of the project area is comprised of “vacant” or “undeveloped” Chugach National Forest and Kenai National Wildlife Refuge (KNWR) lands, as well as some State and Kenai Peninsula Borough lands, these lands are managed for recreation and wildlife habit, and for preservation of those qualities; they are not considered to be developable. Therefore, no lands in the project area were modeled as Category G land uses.

Traffic noise was modeled at a total of 154 receptors broken down by type as follows: 123 residential receptors (Category B); 10 campground receptors, 11 recreation area receptors (Category C), 5 trail receptors (Category C); and 5 commercial receptors (Category E). Four receptors were modeled within KNWR, two in designated Wilderness and two associated with the popular Russian River Ferry site. Map 3.15-1 shows the locations of all modeled receptors. The *Highway Traffic Noise Assessment* (Appendix D) prepared for this project provides additional detail on receptor location and type.

### **3.15.1.3 Existing Noise Levels**

Existing traffic noise levels at representative receptor points were evaluated using the FHWA-approved traffic noise model. The traffic noise model takes into account traffic volume, vehicle types and speeds, roadway geometry, receptor locations, ground cover, and topographic terrain.

The traffic noise model for the project was validated using existing noise level data collected at 11 noise monitoring (NM) locations in the project area on July 13, 15, and 20, 2001 (see sites on Map 3.15-1). Existing traffic noise levels were measured at 8 sites (sites NM1 through NM8) close to the existing highway to verify the accuracy of the noise model. Noise measurements also were taken at 3 remote sites (A, B, and C) to determine ambient background levels at locations where existing highway noise is not a significant source of ambient noise. Measured noise levels for the noise monitoring locations are presented in Table 3.15-3.

**Table 3.15-3. Ambient noise levels measured away from the Sterling Highway**

Noise Monitoring Location	Location	Noise Level Leq(h) (dBA)
NM1	Russian River Ferry Parking Lot	56
NM2	Upper Russian R. Campground parking lot	42
NM3	Russian R. Campground overflow lot	62
NM4	Across road from Gwin's Lodge	63
NM5	Upper Caribou Heights Road	41
NM6	Access trail below private residence	44
NM7	D. Young Ballfield, Cooper Landing	43
NM8	Kenai River boat ramp parking lot	56
A	West Juneau Creek Road	40
B	Resurrection Trail, Juneau Creek bridge	65
C	Opposite Cooper Creek South Campground	61

Note: NM = noise monitoring; Leq(h) = hourly noise equivalent level; dBA = A-weighted decibels

For modeling purposes, an existing Leq(h) noise level of 40 dBA, the most conservative noise level monitored (see Table 3.15-3), was assumed for sites located more than 1,000 feet from an existing or proposed highway alignment.

The measured sound levels were used to calibrate the noise model. Current sound levels are represented by a 2012 modeling effort at 154 identified receptors (the same modeling effort used to predict sound levels for alternatives in the project design year, 2043). The results of the traffic noise modeling for existing conditions indicated that peak noise levels at the modeled receptors ranged from 43 to 69 dBA. One residence (Receptor 106) and one recreation receptor in the Kenai River Recreation Area (Receptor KRRR 2) currently experience highway traffic noise equal to or above the DOT&PF noise impact thresholds. The *Highway Traffic Noise Assessment* (Appendix D) details existing noise levels for all modeled receptors.

#### **3.15.1.4 KNWR and Wilderness**

The KNWR manages the Mystery Creek and Andrew Simons Wilderness units, which partially overlap the project area, to protect natural quiet. In its role as a cooperating agency for this project, USFWS provided information on sound levels in the KNWR. Sound levels, measured at 5-kilometer intervals across KNWR in 2004 and 2006, revealed that the mean sound level, averaged from 257 sites across 2 million acres, was 45.1 dB.<sup>2</sup> This value is similar to background noise levels typically measured in Wilderness across the country. Sound measurements in December 2011 and April 2012 to map the distribution of natural and machine-related sounds in the KNWR found that natural quiet dominated more than 60 percent of the KNWR, predominantly in Wilderness. This study indicated that road traffic was the largest

<sup>2</sup> The USFWS study used standard decibels (dB), not decibels weighted for the range of human hearing (dBA). The FHWA modeling effort undertaken for this project uses decibels weighted for human ear sensitivities. The USFWS study measured instantaneous sounds. The FHWA modeling effort predicts noise levels based on hourly averages. The FHWA methods are designed for assessing impacts to the human environment, not necessarily impacts to wildlife (see Section 3.22 for discussion of wildlife).

contributor of noise to non-Wilderness areas and that road noise had an effect zone of more than 0.5 mile from the source, with road noise in winter audible up to 2 miles from the Sterling Highway. Based on information compiled for USFWS's June 2010 *Comprehensive Conservation Plan*, motor vehicles traveling on the Sterling Highway represent an eightfold increase in noise over typical background sound levels. In some areas across the KNWR, values can range from 32 to 95 dB.

The modeling effort undertaken for this project (Appendix D) included four receptors in KNWR:

- KNWR 1, on Fuller Lakes Trail just inside the Mystery Creek Wilderness boundary (2012 sound level 40 dBA).
- KNWR 2, in the southeast corner of the Mystery Creek Wilderness near MP 55 (48 dBA in 2012).
- KNWR 3, at the parking lot for the popular Russian River Ferry (45 dBA in 2012).
- RR, located in the wooded area north of the Russian River Ferry parking lot (52 dBA in 2012).

Congress designated Wilderness in KNWR in 1980. At that time, the Sterling Highway and its associated traffic noise had existed for about 30 years. The Wilderness boundary that Congress approved follows the edge of power transmission line easements that parallel the Sterling Highway in the project area, and in one location near MP 55 the Wilderness boundary is the highway right-of-way. As indicated by existing sound levels at KNWR 2, traffic noise already affects designated Wilderness but typically is not expected to carry more than about 1,000 feet in forested environments. As indicated in the USFWS study, it is likely that direct sound propagation in areas without obstructions (vegetation or terrain) is audible over much longer distances. That is, from alpine ridgetops in Wilderness, traffic likely is audible under certain atmospheric conditions).

### **3.15.2    *Environmental Consequences***

This section describes the potential effects of each project alternative on noise levels at modeled receptors. Other than construction-related noise, the primary noise source associated with all four build alternatives as well as the No Build Alternative is vehicle traffic. Traffic volumes (numbers of vehicles) are projected to increase as both local and regional populations grow. As a result of increased traffic, future traffic noise is expected to increase with or without the project.

Traffic noise levels estimated for this study reflect the “peak hour” traffic volume. The *Highway Traffic Noise Assessment* (Appendix D) prepared for this project provides a more detailed discussion of the model and traffic parameters used to predict traffic noise for all project alternatives. Traffic noise analysis uses frequencies weighted for human ear sensitivities. It predicts noise levels based on hourly averages. This method is designed for assessing impacts to the human environment, not necessarily impacts to wildlife (see Section 3.22).

#### **3.15.2.1    No Build Alternative**

##### **Direct and Indirect Impacts**

Under the No Build Alternative, the existing highway corridor would be affected by modest increases in traffic noise between 2012 and 2043 due to annual increases in traffic volumes. The

results of the analysis for the 2043 No Build Alternative predict that peak noise levels at modeled receptors would range from 45 to 70 dBA. Changes in noise levels between the existing condition and the No Build Alternative at specific receptors range from no change to an increase of 3 dBA due to changes in traffic volumes predicted to occur between 2012 and 2043.

Table 3.15-4 identifies the four residential receptors and one recreational receptor in the Kenai River Recreation Area that are predicted to have noise impacts under the No Build Alternative. The recreational receptor (KRRR 2) and one of the residences (Receptor 106) currently experience highway traffic noise above the DOT&PF noise impact thresholds. The *Highway Traffic Noise Assessment* (Appendix D) provides additional information on predicted noise levels at all modeled receptors for the No Build Alternative.

**Table 3.15-4. No Build Alternative noise analysis results**

Receptor ID	Existing Land Use (FHWA Activity Category)	DOT&PF Noise Impact Threshold (dBA)	2012 Existing Noise Level (dBA)	2043 No Build Noise Level (dBA)	Change (dBA)
21	Residential (B)	66	65	66	1
105	Residential (B)	66	64	66	2
106	Residential (B)	66	69	70	1
119	Residential (B)	66	65	66	1
KRRR 2	Recreation Area (C)	66	67	68	1

Note: Shaded rows indicate receptors that currently exceed the DOT&PF noise impact threshold.  
 FHWA = Federal Highway Administration; dBA = A-weighted decibels

Noise increases may occur during periodic highway maintenance activities, which would eventually include repaving and bridge replacement. Impacts associated with scheduled maintenance activities are discussed in Section 3.27, Cumulative Impacts.

## **Mitigation**

Retrofitting an existing State highway with noise abatement measures would be classified as a Type II Federal project.<sup>3</sup> For a Type II project to be eligible for Federal-aid funding, the State highway agency must develop and implement a Type II program in accordance with 23 CFR 772.7(e). DOT&PF has elected not to participate in the voluntary Type II program at this time. As a result, no mitigation is proposed for receptors impacted under the No Build Alternative.

### **3.15.2.2 Issues Applicable to the Build Alternatives**

This section presents a summary of impacts of the build alternatives and discusses impact issues that apply to all build alternatives. The No Build Alternative is included for reference. More specific impact measures appear in the following sections devoted to each of the build alternatives.

<sup>3</sup> A Type II Federal project is defined as a Federal or Federal-aid highway project for noise abatement on an existing highway.

The primary noise source associated with all four build alternatives is vehicle traffic. Table 3.15-5 summarizes the number of modeled receptors impacted by each alternative. Receptors predicted to experience impacts are also shown on Map 3.15-2. There were no noise impacts at any of the modeled KNWR receptors. See further discussion under each alternative, below. Additional detail and discussion of noise levels at all modeled receptors can be found in the *Highway Traffic Noise Assessment* (Appendix D). Where traffic noise impacts are identified, noise abatement is considered and evaluated for acoustic feasibility and reasonableness as outlined by the DOT&PF *Noise Policy*.

**Table 3.15-5. Summary of noise impacts**

NAC <sup>a</sup> Class	Receptor Type		2012 Existing	2043 No Build	2043 Cooper Creek	2043 G South	2043 Juneau Creek	2043 Juneau Creek Variant
B	Residential	Approaches or Exceeds NAC <sup>a</sup>	1	4	4	0	0	0
		Substantial Increase	-	0	0	0	0	0
C	Campsite, Recreational areas, trails	Approaches or Exceeds NAC <sup>a</sup>	1	1	1	1	0	0
		Substantial Increase	-	0	1	1	1	1
E	Commercial	Approaches or Exceeds NAC <sup>a</sup>	0	0	1	0	0	0
		Substantial Increase	-	0	0	0	0	0
Total			2	5	7	2	1	1

<sup>a</sup> NAC = Noise Abatement Criteria.

<sup>b</sup> Applies to Wilderness areas located farther from the highway and with well-established human use.

Rumble strips, installed in compliance with the DOT&PF's highway safety policies, may add additional noise to any of the build alternatives. A noise study conducted by the Texas Transportation Institute (Finley and Miles 2006) concluded that overall exterior noise was increased by vehicles driving over rumble strips, but the increase in noise was not significant. The noise of a road vehicle traveling at 55 miles per hour over rumble strips was measured to be less than the noise of a commercial vehicle (such as a large truck) traveling on the same road without driving over the rumble strips. Furthermore, additional highway noise from drivers hitting rumble strips is intermittent and random, rather than sustained. It adds to the overall acoustic energy generated in a unit of time but is not as predictable as passing traffic. As a result, it is not anticipated that periodic rumble strip noise would cause predicted noise levels to approach or exceed the NAC or reach substantial increase levels, but likely would cause occasional irritation to some people nearby.



Noise effects may also occur under all build alternatives during future periodic highway maintenance activities, such as repaving.

### **Construction Impacts**

A major source of noise during construction for any of the build alternatives would come from heavy machinery. In addition, some blasting is likely under all alternatives, which would create short-duration loud noise. Under all build alternatives, blasting would occur at a curve slated for reconstruction, near Milepost (MP) 45, and could occur at other locations if bedrock were encountered. Pile driving also is noisy and likely would occur for bridge construction under all build alternatives. Minor pile driving would occur during placement of guardrails.

Construction is expected to occur principally during daytime hours when occasional loud noises are more acceptable. In addition, no single receptor is located adjacent to a staging area, and therefore, the concentrated activity at staging areas is unlikely to create substantial noise increase. Most construction noise is expected to be intermittent. As a result, extended disruption of normal activities by noise is not anticipated (see Appendix D, the Highway Traffic Noise Assessment). Specific issues are discussed by alternative in the sections below.

### **Mitigation**

Mitigation measures common to all build alternatives would include implementation of measures needed to minimize or eliminate adverse construction noise impacts. Construction noise abatement measures are determined in final project plans and specifications, which include consideration of overall benefits, adverse effects, and costs (DOT&PF 2011c). Abatement measures may include scheduling pile driving or blasting to avoid periods of noise annoyance or adverse impacts to fish and wildlife, routing trucks and heavy equipment entering and exiting the project site away from residential areas to the extent practicable, and maintaining muffler systems on construction equipment. The public and land managers would be notified in advance about the hours of operation for particularly loud construction activities such as blasting and pile driving.

When no alternatives to conducting construction activities during nights, weekends, or on holidays exist, DOT&PF would notify the public prior to conducting these activities and facilitate public involvement throughout construction.

Mitigation for impacts specific to each build alternative is discussed by alternative in the sections below.

#### **3.15.2.3 Cooper Creek Alternative**

##### **Direct and Indirect Impacts**

Under the Cooper Creek Alternative, noise levels at modeled receptors are predicted to be between 33 and 72 dBA in 2043. Changes in noise levels between the existing condition and the Cooper Creek Alternative at specific receptors range from a decrease of 7 dBA to an increase of 16 dBA. Changes in noise levels between the No Build Alternative and the Cooper Creek Alternative at specific receptors also range from a decrease of 7 dBA to an increase of 16 dBA. Changes in noise levels between the No Build and Cooper Creek alternatives are due to changes in traffic volumes, changes in roadway alignments, and changes in shielding.

Four residential properties, one commercial property, and one recreational site in the Kenai River Recreation Area are predicted to have 2043 noise levels approaching, equal to, or above the Noise Abatement Criteria under the Cooper Creek Alternative. One trail site on the Stetson Trail is predicted to experience a 16 dBA increase in noise by 2043.

Table 3.15-6 identifies the noise impacts under the Cooper Creek Alternative. Impacted receptors also are shown on Map 3.15-2. KNWR receptors showed small changes from 2012 conditions—3 dBA or less, which is barely perceptible by the normal human ear. The *Highway Traffic Noise Assessment* (Appendix D) provides additional information on the predicted noise levels at all modeled receptors.

**Table 3.15-6. Receptors with predicted noise impacts, Cooper Creek Alternative**

Receptor ID	Existing Land Use (FHWA Activity Category)	DOT&PF Noise Impact Threshold (dBA)	2012 Existing Noise Level (dBA)	2043 No Build Noise Level (dBA)	2043 Cooper Creek Noise Level (dBA)	Change Between 2043 No Build and 2043 Build	Change Between 2012 Existing and 2043 Build
87	Residential (B)	66	56	58	67	9	11
105	Residential (B)	66	64	66	68	2	4
106	Residential (B)	66	69	70	72	2	3
107	Commercial (E)	71	66	68	71	3	5
119	Residential (B)	66	65	66	66	0	1
KRRA 2	Recreation Area (C)	66	67	68	68	0	1
ST 1	Trail (C)	66	40 <sup>a</sup>	40 <sup>a</sup>	56	16	16

<sup>a</sup> Existing noise levels for sites more than 1,000 feet from the existing highway were identified as 40 dBA, the minimum level measured during model validation (see Section 3.15.1.3).

Note: FHWA = Federal Highway Administration; dBA = A-weighted decibels

Additional noise from periodic highway maintenance and rumble strips under the Cooper Creek Alternative would be similar to those described for all build alternatives above.

### **Construction Impacts**

In addition to the general noise effects common to all build alternatives (Section 3.15.2.2, above), pile driving would occur at the Cooper Landing Bridge replacement site in the heart of the Cooper Landing community. Driving or drilling pilings for the temporary construction bridge and for the permanent new bridge would create intermittent, substantial noise events for multiple days.

Pile driving would also occur at the Schooner Bend Bridge replacement site about one-half mile from Russian River Campground and within about 500 feet of the trailhead for Resurrection Pass Trail. The Cooper Creek Alternative also would involve considerable use of construction equipment in and immediately adjacent to the community of Cooper Landing, because the

alternative would rebuild the existing alignment in the portion of Cooper Landing north and east of the Snug Harbor Road intersection.

Blasting would occur near MP 45. Blasting noise would be an impact to local residents and patrons of a nearby lodge/store/gas station.

### **Mitigation**

Traffic noise abatement was considered at each of the receptors predicted to be impacted in 2043 under the Cooper Creek Alternative. Noise mitigation was considered following the DOT&PF *Noise Policy* (DOT&PF 2011c), but is not proposed for the following reasons:

- Receptor 87 is a residential property but is assumed to be acquired under the Cooper Creek Alternative, given its location relative to the alignment footprint. Mitigation is not recommended for this receptor.
- Receptor 105 is located on a residential parcel (the same parcel occupied by Receptor 106) but represents a non-residential structure. Receptor 105 is a garage and is not considered a land use sensitive to highway noise (DOT&PF 2011c). Mitigation is not recommended for this receptor.
- Receptors 106 and 119 are residences with direct driveway access onto the Sterling Highway. Noise walls for single, isolated residences are not typically able to meet cost-effectiveness (reasonableness) criteria because of the length of wall needed to meet the DOT&PF noise reduction goal. In addition, the ability of noise walls to achieve acceptable noise reduction is greatly reduced by the need for gaps in noise walls for driveway access. Consequently, noise barriers were determined not to be feasible and are not recommended for these receptors.
- Receptor 107 is a commercial property; DOT&PF does not provide noise mitigation for commercial properties or undeveloped lands. Mitigation is not recommended for this receptor.
- Receptor KRRRA 2 is a representative location in the Kenai River Recreation Area used to evaluate noise levels at locations near to the highway in this section of the recreation area. It does not represent a specific, discrete use area, such as a campground, picnic site, etc., that can be shielded by noise barriers. Noise abatement barriers cannot typically provide adequate noise reductions over large recreational areas representing dispersed use in a cost-effective manner. Therefore, mitigation is not recommended for this receptor.
- Receptor ST 1 is a representative location on the Stetson Trail used to evaluate noise levels at locations near to the highway in this section of the project area. It does not represent a specific, discrete use area, such as a campground, picnic site, etc. that can be shielded by noise barriers. Noise abatement barriers cannot typically provide adequate noise reductions over large recreational areas representing dispersed use in a cost-effective manner. Therefore, mitigation is not recommended for this receptor.

The primary construction noise impact associated with the Cooper Creek Alternative would result from pile driving for the Cooper Landing Bridge and Schooner Bend Bridge pilings. To minimize this impact, pile driving would be limited to daytime hours to avoid disrupting residents and campers at night, and conducted with a vibratory hammer (to the maximum extent possible) to minimize effects to outmigrating salmon smolt.

### 3.15.2.4 G South Alternative

#### Direct and Indirect Impacts

Under the G South Alternative, noise levels at modeled receptors are predicted to be between 34 and 68 dBA in 2043. Changes in noise levels between the existing condition and the G South Alternative at specific receptors range from a decrease of 6 dBA to an increase of 21 dBA. Changes in noise levels between the No Build Alternative and the G South Alternative at specific receptors range from a decrease of 6 dBA to an increase of 21 dBA. Changes in noise levels between the No Build and G South alternatives are due to changes in traffic volumes, changes in roadway alignments, and changes in shielding.

One recreational site in the Kenai River Recreation Area is predicted to have 2043 noise levels above the Noise Abatement Criteria under the G South Alternative. One trail site (on the Bean Creek Trail) is predicted to have a substantial increase impact (21 dBA above existing levels) in 2043.

Table 3.15-7 identifies the receptors anticipated to experience noise impacts under the G South Alternative. Receptors predicted to experience impacts are also shown on Map 3.15-2. KNWR receptors showed small changes from 2012 conditions—3 dBA or less, which is barely perceptible by the normal human ear. The *Highway Traffic Noise Assessment* (Appendix D) provides additional information on the predicted noise levels at all modeled receptors.

**Table 3.15-7. Receptors with predicted noise impacts, G South Alternative**

Receptor ID	Existing Land Use (FHWA Activity Category)	DOT&PF Noise Impact Threshold (dBA)	2012 Existing Noise Level (dBA)	2043 No Build Noise Level (dBA)	2043 G South Noise Level (dBA)	Change Between 2043 No Build and 2043 Build	Change Between 2012 Existing and 2043 Build
KRRA 2	Recreation Area (C)	66	67	68	68	0	1
BCT 2	Trail (C)	66	40 <sup>a</sup>	40 <sup>a</sup>	61	21	21

<sup>a</sup> Existing noise levels for sites more than 1,000 feet from the existing highway were identified as 40 dBA, the minimum level measured during model validation (see Section 3.15.1.3).

Note: FHWA = Federal Highway Administration; dBA = A-weighted decibels

Additional noise from periodic highway maintenance and rumble strips under the G South Alternative would be similar to those described for all build alternatives in Section 3.15.2.2, above.

#### Construction Impacts

In addition to the general noise effects common to all build alternatives (above), pile driving would occur for bridge construction at a new location on the Kenai River. Noise of pile driving could affect river users passing by. The river may be partially or fully closed to navigation by boats and rafts during pile driving for safety as well as noise. If all or part of the river remained open at any given time during piling driving, the sound could be loud for boaters floating past, but would be of short duration. While there is no development adjacent to the new bridge site,

pile driving likely could be heard at Gwin's Lodge and Cooper Creek Campground, each about 3,500 feet away to the west and east, respectively.

Pile driving also would occur for the Schooner Bend Bridge replacement about 0.5 mile from Russian River Campground and within about 500 feet of the trailhead for Resurrection Pass Trail. These distances indicate potential for disturbing and disrupting campground and recreation activities but likely would not curtail use.

### **Mitigation**

Traffic noise abatement was considered at each of the receptors predicted to be impacted in 2043 under the G South Alternative. Noise mitigation will comply with the DOT&PF *Noise Policy* (DOT&PF 2011c). Noise mitigation was considered but not proposed for the following reasons:

- Receptor KRRA 2 is a representative location in the Kenai River Recreation Area used to evaluate noise levels at locations near to the highway in this section of the recreation area. It does not represent a specific, discrete use area, such as a campground, picnic site, etc., which can be shielded by noise barriers. Noise abatement barriers cannot typically provide adequate noise reductions over large recreational areas representing dispersed use in a cost-effective manner, and therefore, mitigation is not recommended for this receptor.
- Receptor BCT 2 is a representative location on the Bean Creek Trail used to evaluate noise levels at locations near to the highway in this section of the project area. It does not represent a specific, discrete use area, such as a campground, picnic site, etc., which can be shielded by noise barriers. Noise abatement barriers cannot typically provide adequate noise reduction over large recreational areas representing dispersed use in a cost-effective manner. Therefore, mitigation is not recommended for this receptor.

The primary construction noise impact associated with the G South Alternative would result from pile driving for the new Kenai River and Schooner Bend bridges. To minimize this impact, pile driving would be limited to daytime hours to avoid disrupting residents, lodge guests, and campers at night, and conducted with a vibratory hammer (to the maximum extent possible) to minimize effects to outmigrating salmon smolt.

#### **3.15.2.5 Juneau Creek and Juneau Creek Variant Alternatives**

##### **Direct and Indirect Impacts**

Under the Juneau Creek Alternative, noise levels at modeled receptors are predicted to be between 36 and 65 dBA in 2043. Under the Juneau Creek Variant alternative, noise levels at modeled receptors are predicted to be between 35 and 63 dBA in 2043.

Changes in noise levels between the existing condition and the Juneau Creek and Juneau Creek Variant alternatives at specific receptors range from a decrease of 6 dBA to an increase of 21 dBA. Changes in noise levels between the No Build Alternative and the Juneau Creek and Juneau Creek Variant alternatives at specific receptors range from a decrease of 7 dBA to an increase of 21 dBA. Changes in noise levels between the No Build Alternative and the Juneau Creek or Juneau Creek Variant alternative are due to changes in traffic volumes, changes in roadway alignments, and changes in shielding.

One trail site (on the Bean Creek Trail) is predicted to have a substantial increase in noise levels (21 dBA above existing levels) in 2043 under both the Juneau Creek and Juneau Creek Variant alternatives.

Table 3.15-8 identifies the receptor anticipated to experience noise impacts under the Juneau Creek and Juneau Creek Variant alternatives. The BCT 1 receptor predicted to experience impacts is shown on Map 3.15-2.

Most of the KNWR receptors showed small changes from 2012 conditions for both alternatives—generally 4 dBA or less, which is barely perceptible by the normal human ear. An exception would occur where the new alignment of the Juneau Creek Alternative would pass through the southeast corner of the Mystery Creek Wilderness unit, near a modeled noise receptor. The modeled change was a 10 dBA increase from 2012 conditions to 58 dBA. Also, the Juneau Creek Variant Alternative would result in 4 and 5 dBA increases over 2012 levels at the two Russian River Ferry receptors, but 3 dBA above 2043 No Build levels (barely perceptible) at both of these receptors. None of these KNWR noise levels would approach or exceed the Noise Abatement Criteria. However, although traffic noise from the existing highway affects the Wilderness receptor today, the 10 dBA increase inside this designated Wilderness area would further erode Wilderness qualities, opportunities for solitude and spiritual renewal, and unconfined and primitive recreation. This alternative would transmit highway traffic noise farther into the Mystery Creek Wilderness unit. The *Highway Traffic Noise Assessment* (Appendix D) provides additional information on the predicted noise levels at all modeled receptors.

**Table 3.15-8. Receptors with predicted noise impacts, Juneau Creek and Juneau Creek Variant alternatives**

Receptor ID	Existing Land Use (FHWA Activity Category)	DOT&PF Noise Impact Threshold (dBA)	2012 Existing Noise Level (dBA)	2043 No Build Noise Level (dBA)	2043 Juneau Creek Noise Level (dBA)	Change Between 2043 No Build and 2043 Build	Change Between 2012 Existing and 2043 Build
BCT 1	Trail (C)	66	40 <sup>a</sup>	40 <sup>a</sup>	61	21	21

<sup>a</sup> Existing noise levels for sites more than 1,000 feet from the existing highway were identified as 40 dBA, the minimum level measured during model validation (see Section 3.15.1.3).

Note: FHWA = Federal Highway Administration; dBA = A-weighted decibels

In its role as a Cooperating Agency, USFWS expressed concerns related to noise effects on its resources. Under either of the Juneau Creek alternatives, traffic noise would increase in the Mystery Creek Wilderness area because of a second road. The additional roadway noise could affect Wilderness character and wildlife, as there would then be two highways on the landscape, both in proximity to Wilderness units. USFWS indicated that public use on the Kenai River and the many trail systems throughout the Kenai River valley, as well as a multitude of wildlife species (including but not limited to lynx, wolverine, wolf, brown bear, and Dall’s sheep, as well as migratory birds that have likely already established breeding territories), likely would be affected by the increased noise levels from either of these alternatives. See Section 3.22, Wildlife.



Additional noise from periodic highway maintenance and rumble strips would be similar to those described for all build alternatives in Section 3.15.2.2 above.

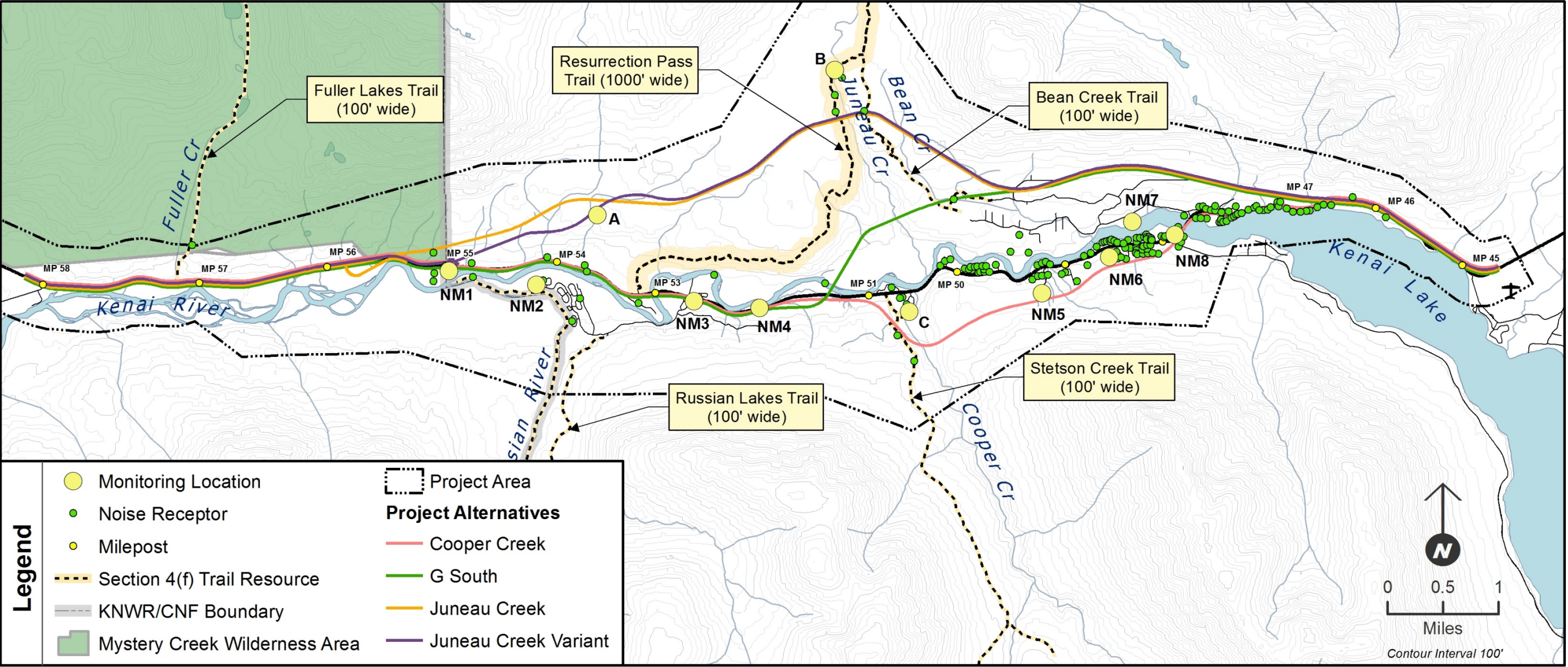
### **Construction Impacts**

In addition to the general noise effects common to all build alternatives (above), the Juneau Creek and Juneau Creek Variant alternatives likely would involve blasting or pile driving or both for construction of the abutments for a new Juneau Creek Bridge over Juneau Creek Canyon. As a clear span bridge, no work would occur within the canyon, but noise on the canyon rims would potentially disturb and disrupt trail users on both the Resurrection Pass Trail (west rim) and Bean Creek Trail (east rim). In addition, construction of the overpass bridge adjacent to Sportsman's Landing under the Juneau Creek Variant Alternative would create general construction noise for adjacent Sportsman's Landing recreational users, but would be unlikely to require any pile driving or blasting.

### **Mitigation**

Traffic noise abatement was considered at receptor BCT 1, which was predicted to be impacted in 2043 under the Juneau Creek and Juneau Creek Variant alternatives. Noise mitigation was considered but not proposed for the following reasons:

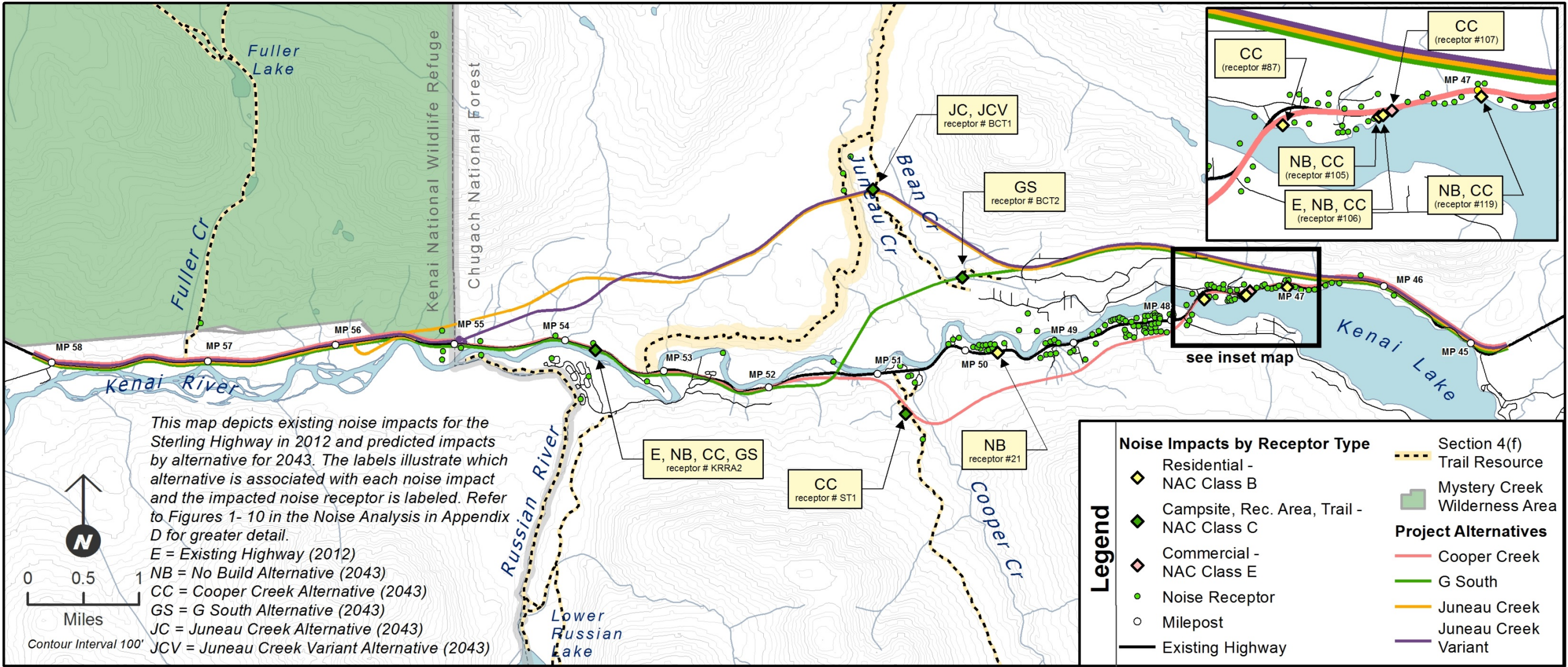
- Receptor BCT 1 is a representative location on the Bean Creek Trail used to evaluate noise levels at locations near to the highway in this section of the project area. It does not represent a specific, discrete use area, such as a campground, picnic site, etc., that can be shielded by noise barriers. Noise abatement barriers cannot typically provide adequate noise reductions over large recreational areas representing dispersed use in a cost-effective manner. Therefore, mitigation is not recommended for this receptor.



Map 3.15-1. Noise monitoring locations in the project area

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Map 3.15-2. Noise impacts in the project area

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